PB-230 423

POLLUTION OF THE INTERSTATE WATERS OF THE CHATTAHOOCHEE RIVER AND ITS TRIBUTARIES, FROM ATLANTA, GEORGIA TO FORT GAINES, GEORGIA. PROCEEDINGS OF CONFERENCE HELD AT ATLANTA, GEORGIA ON JULY 14-15, 1966. VOLUME II

Federal Water Pollution Control Administration
Washington, D. C.

15 July 1966

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PROCEEDINGS

VOLUME 2

ALABAMA
ATLANTA
Chattahoochee River
GEORGIA

Atlanta - July 14-15, 1966

Conference

In the matter of Pollution of the Interstate Waters of the Chattahoochee River and its Tributaries, from Atlanta, Georgia to Fort Gaines, Georgia

UNITED STATES
DEPARTMENT OF THE INTERIOR
Federal Water Pollution
Control Administration

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Springfield VA 22151

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FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

- - -

In re:

ENFORCEMENT CONFERENCE
ON POLLUTION OF THE
CHATTAHOOCHEE RIVER

GRAND BALLROOM
Americana Motor Hotel
Atlanta, Ga.
Thursday, July 14, 1966

Conference in the above-entitled matter was convened, pursuant to notice, at 9:45 a.m.

MURRAY STEIN, Chairman

CONFEREES:

IRA L. MYERS, M. D., Chairman,
Alabama Water Improvement Commission

J. L. CROCKETT, JR., Director, Technical Staff,
Alabama Water Improvement Commission
Alabama Water Improvement Commission

R. S. HOWARD, JR., Executive Secretary, Georgia
Water Quality Control Board
Water Quality Control Board
HERBERT ROGERS, Regional Director, Federal Water
Pollution Control Administration, Southeast
Region

JOHN M. RADEMACHER, Federal Water Pollution
Control Administration, Southeast Region

- - -

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CHAIRMAN STEIN: May we call on Mr. Howard for Georgia.

STATEMENT OF

R. S. HOWARD, JR., EXECUTIVE SECRETARY,

GEORGIA WATER QUALITY CONTROL BOARD

MR. HOWARD: Mr. Chairman, we have quite a big report here, with documentary letters and schedules, which we would like to make a part of the record.

CHAIRMAN STEIN: This will appear in the record as if read, without objection.

MR. HOWARD: I would like to give copies to all the Conferees before I start reading.

Mr. Stein, Dr. Myers, Mr. Crockett, Mr. Rogers, Mr. Rademacher, ladies and gentlemen: Under the State Water Quality Control Board, the Division for Georgia Water Quality Control initiated a pollution abatement program on the Chattahoochee River at a Conference in Atlanta on February 25, 1965. The very critical pollution of the stream from sewage and industrial wastes was explained and discussed with representatives from cities and industries known to be discharging untreated and inadequately treated wastes to the river. They were advised that the Board would require, within a reasonable time, a plan and schedule for pollution abatement from each of them.

Subsequent to this Conference, inventory and water quality studies have been carried out by the Division from Buford Dam to the Florida line. The Southeastern Regional Office and the Comprehensive Project of the Federal Water Pollution Control Administration have cooperated in certain phases of the Division's studies. This cooperation involving exchange of water quality data and personnel between State and the Federal agencies has been pleasantly agreeable and mutually helpful, in our opinion.

The subject of the Conference today, "Report on Pollution of the Chattahoochee River," simply supports the findings of the Division; that is, that the Chattahoochee is grossly polluted for about 100 miles below Atlanta from sewage and industrial wastes.

Also, bacterial contamination from sewage in certain reaches below West Point and Columbus is of a serious nature, a public health hazard to various legitimate water uses.

However, this Report appears to be a composite study based on surveys conducted between 1961 and 1965. It is neither current nor complete and fails to give a true picture of the existing problems. It is disappointing to us that the Report does not provide any useful information on this Board's abatement program and that it fails to record the cooperative efforts exerted by

Alabama and Georgia to solve problems of mutual interest.

We are concerned that this Conference Report may confuse the public and promote complacency on the part of some polluters. For example, six industries in Georgia are listed in the Report as contributing to pollution of the Chattahoochee and its tributaries.

Our surveys have turned up an additional 45 dischargers of untreated or inadequately treated industrial wastes; 15 communities or municipalities are listed, while we have found the total to be 22.

Also, our bacteriological studies during the past year indicate that the bacterial pollution on some tributaries is even greater than that shown in the Report. Advanced publicity on this Conference emphasizes that the Cities of Atlanta and Columbus are major contributors of pollution. That is true, but it should be pointed out now that minor contributors of pollution, especially with respect to small tributaries, are just as important as the largest one. Everyone, regardless of volume or nature of waste, must provide adequate treatment in accordance with the requirements of the State Water Quality Control Act. Indeed, the damage from a small discharge of some toxic waste from an industry may be many times more severe than that of a large volume of domestic sewage from a city.

For the Conference record and to up-date and correct the Report, we want to submit the following summary on Georgia's pollution abatement program for the Chattahoochee River.

I will not read all the information on the municipalities and industries we have located here, but I will only read the status and progress of those municipalities and those industries that were cited in the Report.

First, I shall read the community, the present treatment, the receiving stream, and the present status and comments.

MARIETTA

The East Side Plant provides secondary treatment plus chlorination. The receiving stream is Sope Creek.

The Southeast Side Plant provides secondary treatment plus chlorination. The receiving stream is Rottenwood Creek.

The West Side Plant provides secondary treatment plus chlorination, and the receiving stream is Wards Creek.

The South Side Plant provides secondary treatment plus chlorination, and the receiving stream is Olley Creek.

Marietta has an engineering report and grant application on file for providing improved chlorination and tertiary treatment.

COBB COUNTY

The Church Road Plant provides secondary treatment plus chlorination. The receiving stream is Nickajack Creek. The system is overloaded with inadequately treated sewage and treated sewage. An engineering report is in preparation. One of the recommendations will probably be diversion of part of the flow to the South Cobb Plant to take care of the overload on the small creek at this time.

The South Cobb Plant provides secondary treatment and discharges directly to the Chattahoochee River. Adequate treatment is provided.

We have a tabulation which we will take up later on which takes in all the Cobb County subdivisions. I believe there were 26 of them.

SMYRNA

The Town of Smyrna provides secondary treatment plus chlorination and discharges into Bohannon Creek, another tributary of the Chattahoochee. On behalf of the city, the consulting engineer has furnished written statement to the effect that adequate facilities will be complete by the end of 1970. The plant presently is overloaded.

DOUGLASVILLE

Douglasville only has primary treatment and discharges to Sweetwater Creek, a tributary to the

Chattahoochee. That is a stream that has water supplies on it. Engineers have advised us that construction on needed treatment plant will begin by July 1, 1967 if a Federal grant is obtained.

AUSTELL

The Town of Austell has primary treatment. It discharges to Sweetwater Creek. We have a schedule furnished calling for beginning of construction by July 1967, subject to financial limitations.

Now, the Town of Austell is now negotiating with Cobb County toward a joint system in Buttermilk Creek area. Effluent chlorination is scheduled as an interim measure.

CHAIRMAN STEIN: It might help the record on this Austell situation to ask this: Is that a schedule furnished for construction for secondary treatment?

MR. HOWARD: Yes.

CHAIRMAN STEIN: Okay.

MR. HOWARD: And being chlorinated.

CHAIRMAN STEIN: And being chlorinated?

Now, on the next one before that, Douglasville, you say that the engineer advises construction on needed treatment plant will begin by July 1, 1967 if Federal grant is obtained. The way you obtain a Federal grant is for the State to give priority. We have never turned one down.

Are you going to give priority to that?

MR. HOWARD: If it has a sufficient number of points. We have a point system that was imposed upon us by the Federal Government, and we have to use that point system. Isn't that right?

CHAIRMAN STEIN: This might depend on your point of view. We do not believe that the point system was imposed on you by the Federal Government. I don't see that anywhere in the law.

MR. HOWARD: Well, I talked to Mr. Rogers when I first came to this job and talked about the wisdom of just forgetting about the point system.

CHAIRMAN STEIN: You know how they do that in Oklahoma. I asked the Governor how they decided what to give priority. He said, "Well, I get them all together in my office, and I make the decision."

MR. ROBERT BYERS (Director, Water Supply Service, Georgia Department of Health): I'd like to make a statement.

CHAIRMAN STEIN: Pardon me. I don't think we can take comments from the floor.

MR. BYERS: You made a misstatement.

MR. HOWARD: Mr. Byers, with the State Health Department in the Water Supply Service, has previously objected to the point system that the Regional Office of

FWPCA had requested Georgia have. I think all the States have a point system, don't they?

CHAIRMAN STEIN: No, I don't know about most of the States, but let Mr. Rogers say that.

As far as I am concerned -- and again let me speak from the point of view of the law -- the law does not require a point system, the Federal law.

MR. HOWARD: You should have been my lawyer.

(Laughter)

MR. ROGERS: This is true. The law does not require a point system, but it does require that we set priorities, and it does also include in the setting of those priorities certain things that have to be considered. About the only way I see you can consider them is to set up a point system. If there is a better way, I don't know it.

MR. HOWARD: Well, you have got to recognize the fact that people in a State would certainly have to adopt some kind of a priority system all right and would use their judgment in determining what particular installations, from the standpoint of public health and various uses of water, would set up a priority system.

Now, nobody can set up a good priority system, in my opinion. But we have one. It was one approved by the Regional Office. We only used it because they insisted we use it.

CHAIRMAN STEIN: I don't doubt you have a priority system.

Not to confuse this, let me give you this point. We very well may be getting additional Federal grants. By the way, that bill passed the Senate, I understand. I was speaking to Washington during the lunch hour. That is the bill authorizing $6 billion for grants for this, which should raise the ante considerably, if the House version is close enough to the Senate.

But, obviously, unless the Congress provides an infinite amount of dollars, we are going to have to have a limited amount of money going out to the States. This is divided among the States according to a formula. Some of us who have been around Washington a long time call this the "Ickes Rule," named after Harold Ickes.

Harold Ickes used to say, "Any bright young boy can develop a good method of providing Federal aid and getting it out to the project where they need it. But if you are going to get it through the Congress, you are going to have to cut the pie kind of equally and divide it among the States."

I think since Ickes said that in the '30's, he has been right.

Now, given a limited amount of money that the

Federal Government does provide in any year, we allocate that money among the 50 States. And in our program -- and I think this is one of the strengths of our program -- we do not on the Federal level, as in many of the other programs, set priorities among projects. The State sets the priority on the basis of financial as well as water pollution control needs.

Many of the States have chosen to do this on the basis of a point system. But the setting of the priority, if it is at all rational and at all reasonable, under our law is a State prerogative, and we don't look into this. In other words, --

MR. HOWARD: You should have sent some directives down to the Regional Office and got that straightened out right quick.

CHAIRMAN STEIN: But the point is on this, that if the Federal grant is obtained -- and I don't want to name the name of the city, but for any city in Georgia -- this is the determination: As long as there is a rational basis used with these two elements considered under the law (water pollution control and financial needs), this is a judgment to be made by the State agency and not by the Federal Government.

MR. HOWARD: Thank you.

CHAIRMAN STEIN: Thank you, sir.

MR. HOWARD: The next town is Atlanta.

ATLANTA

We have three plants -- the R.M. Clayton Plant, the Sandy Creek Plant, and the Utoy Creek Plant. All have primary treatment. The first two, the Clayton Plant and the Sandy Creek Plant, discharge to the Chattahoochee River.

Secondary treatment of all wastes is scheduled by July 1, 1971. We have an engineering report we have approved and a resolution of the City Council setting forth a construction schedule.

CHAIRMAN STEIN: One fast question. Is chlorination included?

MR. HOWARD: That would be secondary treatment with chlorination.

CHAIRMAN STEIN: Thank you, sir.

MR. HOWARD: Next is Fairburn.

FAIRBURN

Fairburn now has a secondary treatment facility, but it is overloaded. It discharges into Deep Creek, a tributary of the Chattahoochee. It is badly overloaded. We have now on file a report and an application for a grant for expanded secondary treatment facilities and chlorination.

PALMETTO

Palmetto, Georgia. Primary. It discharges to

Bear Creek. The town has now hired engineers and is making a study. We haven't got a schedule from Palmetto at this time.

NEWNAN

Newnan, Georgia. East Plant provides secondary treatment. It discharges to Cotton Mill Branch.

North Plant provides secondary treatment and discharges to Snake Creek.

West Plant provides secondary treatment and discharges to Mineral Springs Branch.

The new facility on the south side of Newnan is now under construction to provide secondary treatment. Snake Creek Plant is adequate. Preparation of detailed plans for new Cotton Mill Branch Plant scheduled for 1968. Preparation of detailed plans for new Mineral Springs Branch Plant ~~Branch~~ scheduled for 1971, but this program is subject to acceleration. We have so notified the city.

GRANTVILLE

Plant No. 1. There is a septic tank discharging to New River. We now have engineers making a study of their problem, and they have agreed to submit final plans for review in early 1967.

Plant No. 2. Septic tank. It discharges to Yellow Jacket Creek.

HOGANSVILLE

The same thing applies to Hogansville. We have a septic tank discharging to Yellow Jacket Creek, and raw sewage discharges to the same creek. They have hired engineers and are now preparing plans to provide secondary treatment. They have made an application for Federal grant, and it has been accepted. This application was accepted in December 1965.

LAGRANGE

Hogansville Road Plant provides secondary treatment. It discharges to Yellow Jacket Creek.

Blue John Creek Plant provides secondary treatment plus chlorination and discharges to Blue John Creek.

Yellow Jacket Creek Plant provides secondary treatment plus chlorination and discharges into Yellow Jacket Creek.

Hogansville Road Plant and Blue John Creek Plant are adequate. Yellow Jacket Creek Plant is under construction. Blue John Creek industrial waste plant to treat wastes from Calloway Mills is to be let to contract by September of 1966. Chlorination of all effluents is anticipated prior to closing of West Point Reservoir.

WEST POINT

West Point now has a raw sewage discharge to the Chattahoochee River. I think you got the report from

Mr. Granberry that they have included the handling of this municipal sewage in the plant being designed and built for West Point Manufacturing Company.

CHAIRMAN STEIN: How about that Hogansville Road Plant. Do they have chlorination facilities?

MR. HOWARD: They will be required to provide secondary treatment.

CHAIRMAN STEIN: In other words, the plant is not adequate now?

MR. HOWARD: Not adequate now.

CHAIRMAN STEIN: Okay. Thank you.

MR. HOWARD: Columbus.

COLUMBUS

South Plant was completed not long ago. I think it was about a year ago. It discharges to the Chattahoochee River and is only primary.

The North Plant, which is under construction now, provides secondary treatment plus chlorination.

North Plant is to be in operation by the fall of 1966. We have in hand a schedule for provision of secondary treatment at South Plant by 1973. This program is subject to acceleration. I say that because the Water Quality Board has not agreed to that schedule. Effective post-chlorination of South Plant is now under study as an interim measure.

FORT BENNING

Fort Benning Plant No. 1 and Plant No. 2 provide primary treatment with chlorination and now have secondary treatment facilities now under construction at both of these primary plants.

As you heard previously, Fort Benning will provide secondary treatment with disinfection when these plants are completed.

They have another plant called the Harmony Church Plant which provides secondary treatment and discharges to Mill Creek.

FULTON COUNTY

Marsh Creek Plant provides secondary treatment plus chlorination. This is a new plant that has been completed this year.

The Fulco Plant provides primary treatment and discharges to the Chattahoochee River.

The Camp Creek Plant is a primary plant plus chlorination. It discharges to Camp Creek.

The County plans to include provision of secondary treatment of Camp Creek Plant in 1967. G.O. bond referendum has been tentatively scheduled. The Water Quality Control Board will work with the County to have Fulco Plant improvements included in 1967 bond referendum.

MR. ROGERS: Let me ask a question here, Rock.

Does this include the industrial plants along the west side of the City here?

MR. HOWARD: This includes Fulco. That is one of them.

MR. ROGERS: Is that one in the Fulton Boulevard industrial area?

MR. HOWARD: Yes.

VILLA RICA

Villa Rica is a primary treatment facility which discharges to the Sweetwater Creek. Detailed engineering plans for extended aeration plant with post-chlorination expected by August of 1966. Construction should begin in November. Federal grant has been accepted by the City.

FRANKLIN

We have issued an operating permit to Franklin for a new extended aeration plant. This permit was issued in February of 1966 to provide what we considered to be adequate treatment at that time.

PINE MOUNTAIN

Pine Mountain is one of the towns that was not studied in the report, but it has primary treatment, and they are now negotiating with a consulting engineer and anticipate that they will have secondary treatment in operation in five years. It discharges to Turkey Creek.

CALLOWAY GARDENS

Calloway Gardens has secondary treatment. It discharges to Little Mountain Creek. Existing aeration plant is presently adequate. Expansion plan in 1967 to handle heavier loads due to further resort development. Effluent chlorination will be required as part of the expansion program.

FORT GAINES

Raw sewage. This was not studied in the report. This is a Chattahoochee River discharge. Engineering study is now being prepared. They have applied for E.D.A. grant. City anticipates beginning of construction on treatment plant in 1967.

LUMPKIN

They have a primary treatment facility. It discharges to Hodchodkee Creek. City advises us that they will retain an engineer shortly and expect to have secondary plant in operation within five years.

CHAIRMAN STEIN: This is just clarification. Go back to Calloway Gardens, not to pick this one in particular. In your particular area in Georgia do you consider an extended aeration plant to be secondary treatment?

MR. HOWARD: Some of them are, yes.

CHAIRMAN STEIN: All right.

MR. HOWARD: Now, in Part 3 in the report we refer to Cobb County subdivisions. I won't go to the trouble of reading every one of these, but I will just say this: There are 26 subdivisions in Cobb County. This points up some of the difficulty in providing adequate and well-managed treatment facilities in a metropolitan area such as Cobb County. This also emphasizes the terrific job that the States have to give proper surveillance to treatment facilities of this kind. This involves a lot of individual plants that have been built for subdivisions.

I would just like to read this note. These systems were cited in the Federal report as one entry -- "Cobb County Subdivisions." They have been tabulated to indicate the magnitude and diversity of this problem. It should be emphasized that such systems exist in other counties in the Chattahoochee Basin but are not so prevalent as in Cobb County. As the other counties were not so cited, they have been omitted from this summary but are being included in Georgia's comprehensive abatement program for the Chattahoochee River Basin.

We have reached the point in the metropolitan area where we must consider something beyond secondary treatment and chlorination for some of our very small streams if we are going to preserve them for all beneficial uses.

I will stop that report on the status of the various projects. You have them in the record.

MR. ROGERS: Let me just ask a question on Sweetwater Creek. Do you plan chlorination on those facilities?

MR. HOWARD: Yes. It is a must there in that case. And in some cases we are probably going to have to ask for expanded facilities with a high degree of tertiary treatment of some kind on a number of those. Of course, that involves water supplies as well as recreational uses.

(The complete tables above referred to follow:)

GEORGIA SEWERAGE SYSTEMS DISCHARGING TO THE CHATTAHOOCHEE RIVER BASIN
ATLANTA TO FORT GAINES

PART I - SYSTEMS CITED IN FEDERAL REPORT OF JANUARY 1966, TABLES

COMMUNITY OR MUNICIPALITY	PRESENT TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
***MARIETTA**			
East Side Plant	Secondary $+cl_2$	Sope Creek	Engineering report and grant application on file for providing improved chlorination and tertiary treatment.
S.E. Side Plant	Secondary $+cl_2$	Rottenwood Creek	
West Side Plant	Secondary $+cl_2$	Wards Creek	
South Side Plant	Secondary $+cl_2$	Olley Creek	
COBB COUNTY			
Church Rd.Plant	Secondary $+cl_2$	Nickajack Creek	Overloaded - engineering report in preparation. Diversion of part of flow to S. Cobb plant is a likely recommendation.
South Cobb Plant	Secondary $+cl_2$	Chattahoochee R.	Adequate treatment provided.
Cobb County Subdivisions - See attached tabulation of individual installations, Part 3, hereof			
***SMYRNA**	Secondary $+cl_2$	Bohannon Creek	On behalf of the City, the consulting engineer has furnished written statement to the effect that adequate facilities will be complete by the end of 1970.
***DOUGLASVILLE**	Primary (Imhoff Tank)	Sweetwater Creek	Engineer advises construction on needed treatment plant will begin by July 1, 1967 if Federal grant is obtained.

COMMUNITY OR MUNICIPALITY	PRESENT TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
*AUSTELL	Primary	Sweetwater Creek	Schedule furnished calling for beginning construction by July 1967 subject to financial limitations. Now negotiating with Cobb County toward joint system in Buttermilk Cr. area. Effluent chlorination scheduled as interim measure.
*ATLANTA			
R.M. Clayton Plant	Primary	Chattahoochee R.	Secondary treatment of all wastes scheduled by July 1, 1971. Engineering report and Board of Alderman Resolution setting forth a construction schedule received.
Sandy Creek Plant	Primary	Chattahoochee R.	
Utoy Creek Plant	Primary	Utoy Creek	
See Fulton County entry in Part 2 hereof for plants operated under contract by City of Atlanta.			
FAIRBURN	Secondary	Deep Creek	Overloaded. Report and grant application on file for expanded and adequate facilities.
*PALMETTO	Primary	Bear Creek	Engineering study in preparation.
*NEWNAN			
East Plant	Secondary	Cotton Mill Br.	New facility on south side of Newnan under construction. Snake Creek plant adequate. Preparation of detailed plans for new Cotton Mill Branch plant scheduled for 1968; preparation of detailed plans for new Mineral Springs Branch plant scheduled for 1971 but program is subject to acceleration.
North Plant	Secondary	Snake Creek	
West Plant	Secondary	Mineral Springs Br.	
*GRANTVILLE			
Plant No. 1	Septic tank	New River	Engineering study in preparation. Receipt of final plans for review expected in early 1967.
Plant No. 2	Septic tank	Yellow Jacket Cr.	

COMMUNITY OR MUNICIPALITY	PRESENT TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
***HOGANSVILLE**			
	Septic tank	Yellow Jacket Cr.	Detailed plans in preparation. Federal grant offered and accepted in December,1965.
	Raw Discharge	Yellow Jacket Cr.	
***LAGRANGE**			
Hogansville Rd. Plant	Secondary	Yellow Jacket Cr.	Hogansville Rd. Plant and Blue John Cr. plant are adequate. Yellow Jacket Cr. plant is under construction. Blue John Cr. industrial waste plant to treat wastes from Calloway Mills to be let to contract by Sept., 1966. Chlorination of all effluents anticipated prior to closing West Point Reservoir.
Blue John Cr. Plant	Secondary $+cl_2$	Blue John Cr.	
Yellow Jacket Cr.Plant	Secondary $+cl_2$(V C)	Yellow Jacket Cr.	
Blue John Cr. Plant (Industrial waste)	Secondary(prop.)	Blue Jonn Cr.	
***WEST POINT**	Raw Discharge	Chattahoochee R.	City has entered joint treatment scheme with Lanett and West Point Manufacturing Co. Treatment plant scheduled for completion by Spring, 1968.
***COLUMBUS**			
South Plant	Primary $+cl_2$	Chattahoochee R.	North Plant to be in operation by Fall, 1966 Schedule in hand for provision of secondary treatment at South Plant by 1973; program is subject to acceleration. Effective post-chlorination of South Plant under study as interim measure.
North Plant	Secondary $+cl_2$	Chattahoochee R.	
FORT BENNING			
Plant No. 1	Primary $+cl_2$	Chattahoochee R.	Secondary treatment facilities under construction at both existing primary plants.
Plant No. 2	Primary $+cl_2$	Chattahoochee R.	
Harmony Church Plant	Secondary	Mill Creek	

PART 2 - SYSTEMS OMITTED FROM FEDERAL REPORT OF JANUARY, 1966, TABLES

COMMUNITY OR MUNICIPALITY	PRESENT TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
*FULTON COUNTY			
Marsh Creek Plant	Secondary $+cl_2$	Chattahoochee R.	County plans to include provision of secondary treatment of Camp Cr. Plant in 1967 G.O. bond referendum. Ga. Water Quality Control Board will work with the County to have Fulco Plant improvements included in 1967 bond referendum.
Fulco Plant	Primary	Chattahoochee R.	
Camp Creek Plant	Primary $+cl_2$	Camp Creek	
VILLA RICA	Primary (Imhoff Tank)	Sweetwater Cr.	Detailed engineering plans for extended aeration plant with post-chlorination expected by August, 1966. Construction should begin in Nov. Federal grant accepted (WPC-GA-146)
*FRANKLIN	Secondary	Chattahoochee R.	Operating permit for new extended aeration plant issued in February 1966.
*PINE MOUNTAIN	Primary (Imhoff Tank)	Turkey Creek	City is negotiating with consulting engineer and anticipates having secondary treatment plant in operation in five years.
CALLOWAY GARDENS	Secondary	Little Mt. Creek	Existing aeration plant is presently adequate. Expansion planned in 1967 to handle heavier loads due to further resort development. Effluent chlorination will be required as part of expansion program.
*FORT GAINES	Raw discharge	Chattahoochee R.	Engineering study in preparation. Pending receipt of E.D.A. grant. City anticipates beginning construction on treatment plant in 1967.
LUMPKIN	Primary (Imhoff Tank)	Hodchodkee Cr.	City advises they will retain an engineer shortly and expect to have secondary plant in operation in five years

PART 3 - COBB COUNTY SUBDIVISIONS, TRAILER PARKS, SCHOOLS, ETC.

SOPE CREEK AND TRIBUTARIES

PROJECT	DESIGN POPULATION	TYPE TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
Seven Springs Estates	500	Ext. aeration		In operation
Shallowford Estates	280	Stabilization pond		Under construction
Waverly Woods S/D	200	Ext. aeration +cl_2		Under construction
CHATTAHOOCHEE RIVER AND TRIBUTARIES				
Terrell Mill Estates S/D	1224	Stabilization pond		In operation
Farmington S/D	250	Ext. aeration +cl_2		Under construction
Cochise S/D		Stabilization pond		In operation
Vinings Hgts. #7 S/D	350	Ext. aeration		In operation
ROTTENWOOD CREEK AND TRIBUTARIES				
Stratford S/D	720	Stabilization pond		Satisfactory at present load - prior to new connections, plant expansion is required
NICKAJACK CREEK AND TRIBUTARIES				
Civitania Woods S/D	220	Stabilization pond		Under construction
Frontier Trails S/D	520	Stabilization pond		Under construction
Maple Valley Estates	300	Stabilization pond		Under construction
Kenwood S/D	696	Ext. aeration +cl_2		In operation
Wallace Trailer Court	222	Ext. aeration +cl_2		In operation
Russell Elem. School		Sand filter		Under construction
Theo Shopping Center		Sand filter		In operation
SWEETWATER CREEK AND TRIBUTARIES				
Calloway Acres S/D	468	Stabilization Pond	Olley Cr.	Under construction
Rustic Village S/D	244	Stabilization pond	Olley Cr.	Application for operating permit received
Green Acres Mob. Home Pk.	210	Stabilization pond	Sweetwater	Under construction
Heritage Hills S/D	640	Aer.lagoon-pond	Buttermilk	In operation
Golden Acres S/D	215	Ext. aeration	Buttermilk	Under construction

Continued-

SWEETWATER CREEK AND TRIBUTARIES

PROJECT	DESIGN POPULATION	TYPE TREATMENT	RECEIVING STREAM	PRESENT STATUS AND COMMENTS
Cobb County Farm Westgate S/D	543	Stabilization pond	Olley Cr.	Application for operating permit received
Wildwood Forest S/D	356	Stabilization pond	Sweetwater	In operation
Allyson Park S/D	3200	Stabilization pond	Noses Cr.	Under construction
Isley Development	180	Ext. aeration $+cl_2$	Powder Springs Cr.	In operation
McEachern School	1642	Stabilization pond	Wildhorse	In operation
Clarkdale School	600	Stabilization pond	Sweetwater	In operation

NOTE: The above tabulation is based on the best information presently available on Cobb County treatment works. Work of the Division for Georgia Water Quality Control is continuing in Cobb County toward the overall objective of upgrading small treatment devices and ultimately eliminating them by provision of a county wide sewerage system.

These systems were cited in the Federal report of January 1966, Table 5, as one entry "Cobb County Subdivisions." They have been tabulated to indicate the magnitude and diversity of this problem. It should be emphasized that such systems exist in other counties in the Chattahoochee basin but are not so prevalent as in Cobb County. As the other counties were not so cited they have been omitted from this summary but are being included in Georgia's comprehensive abatement program for the Chattahoochee River Basin.

* Correspondence relative to construction schedule included in Georgia Water Quality Control Board Exhibit "A".

GEORGIA INDUSTRIES LISTED IN TABLE NO. 5 OF WEST'S REPORT ON POLLUTION OF THE CHATTAHOOCHEE RIVER

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
Sonoco Products	Atlanta	Paper re-pulping	Construction permit has been issued for a primary clarifier with schedule for secondary treatment at the end of three years.
Municipal Incinerator	Atlanta	Incineration	Present plans indicate that this wastewater will be discharged to the proposed expansion of the Atlanta sewerage system.
Callaway Mills	LaGrange	Textile	City of LaGrange's Blue John Creek plant will treat this waste and contract will be awarded by Sept. 1, 1966, for construction of this plant.
Muscogee Mill	Columbus	Textile	Discharged to Columbus municipal sewers.
West Point Manufacturing Co.	Columbus	Textile	Officials of the City of Columbus and management of the Mill have advised that this waste will be discharged to a municipal sewer within the next six months.
Reeves Bros.	Columbus	Textile	Consulting engineers are presently evaluating whether the industry should discharge their waste to Columbus municipal sewers or construct their own waste treatment plant.

GEORGIA INDUSTRIES NOT CONSIDERED IN REPORT ON POLLUTION OF THE CHATTAHOOCHEE RIVER

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
ATLANTA AREA			
Amarlite	Atlanta	Aluminum anodizing	pH adjustment facilities have been installed and a permit application filed with the Ga.W.Q.C.Board.
Atlanta Tallow	Atlanta	Rendering plant	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Bona Allen	Buford	Tannery	Under order of Ga. W.Q.C. Board - Treatment plant under construction.
Coats & Clark	Clarkdale	Textile	At request of Ga.W.Q.C.Board, secondary treatment facilities are being installed - plans being prepared.
Complete Auto Transit Co.	Doraville	Transportation	Will be diverted to public sewer together with General Motors' waste at request of Ga.W.Q.C.Board.
DeKalb County Water Works	Doraville	Water treatment	Intermittent discharge of sludge to Nancy Creek - County requested to evaluate facilities for removing it.
General Motors Assembly Div.	Doraville	Automobile assembly	On notice from Ga.W.Q.C.Board to divert all wastewater to public sewer or install own waste treatment plant.
Georgia Power Company	Atlanta	Steam electric generating plant	Sedimentation pond provided for fly ash, domestic waste treated in a secondary biological plant, no provisions to reduce thermal pollution.
Hess Oil Company	Doraville	Petroleum terminal	Storage tanks diked with an oil separator installed at request of Ga.W.Q.C.Board.

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
Ideal By-Products Company	Gwinnett County	Rendering Plant	On notice from Ga.W.Q.C.Board to comply with Georgia Water Quality Control Act.
Kraft Food Company	Decatur	Dairy products	Cooling water discharged to a tributary of Peachtree Creek - no action deemed necessary.
L & N Railroad Company	Atlanta	Transportation	On notice from Ga.W.Q.C.Board to provide removal of detergents & oils - following conference with us, company engineers were authorized to study the problem and plan a solution.
McConnell Drum Service	Doraville	Drum reclamation	On notice from Ga.W.Q.C.Board - consulting engineer is designing pumping station to divert all waste to a public sewer.
Meade-Atlanta Paper Company	Atlanta	Paper board converting	Waste flow has been diverted to public sewer at request of Ga.W.Q.C.Board.
W.C.Meredith Company	East Point	Wood preserving	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Plantation Pipeline Company	Doraville	Liquid products transfer	An oil separator & polishing pond traps wasted products, efficiency presently being evaluated.
Prestolite Battery	East Point	Batteries	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Seaboard Oil Company	Doraville	Oil reclamation	On notice from Ga.W.Q.C.Board - consulting engineer is preparing plans for pre-treatment plant with effluent to discharge to public sewer.
Seitzinger, Inc.	Atlanta	Lead reclamation	On notice from Ga.W.Q.C.Board - pre-treatment facilities being installed for effluent to enter public sewer.

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
Seydell Woolley Company	Atlanta	Textile	Following notification from Ga.W.Q.C.Board this waste was diverted to public sewer.
Southern Concrete Company	Doraville	Ready mix concrete	On notice from Ga.W.Q.C.Board to comply with the Water Quality Control Act - engineers presently studying existing conditions.
Southern Railway	Atlanta	Transportation	On notice from Ga.W.Q.C.Board - consulting engineer has been retained to design waste treatment facility.
Southern States Chemical Co.	East Point	Textile chemicals	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Southern Wood Preserving Co.	East Point	Wood preserving	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Swift Agricultural Chemical Co.	Atlanta	Fertilizer & pesticides	Fulton County Health Dept. has been requested to require this operation to connect to public sewer.
Williams Bros. Concrete Co.	Doraville	Ready mix concrete	On notice from Ga.W.Q.C.Board to comply with Georgia Water Quality Control Act, engineers presently designing facilities.
COBB & DOUGLAS COUNTIES			
Austell Box Board Company	Austell	Paper re-pulping	On notice of Ga.W.Q.C.Board - engineering studies presently being conducted with view to closing up wastewater system.
Chem-Salts Company	Powder Springs	Chemical products	On notice from Ga.W.Q.C.Board to comply with Water Quality Control Act - consulting engineer has been retained.
Cracker Asphalt Company	Douglasville	Refinery	Treatment facilities installed and application for a permit filed with the Ga.W.Q.C.Board.

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
Golden City Hosiery Mill	Villa Rica	Textile	On notice from Ga.W.Q.C.Board to discharge to City's sewerage system - plans in progress.
Lockheed, Inc. (Includes Dobbins AFB and Naval Air Sta.)	Marietta	Aircraft	On notice from Ga.W.Q.C.Board to provide a higher degree of treatment - consulting engineer is presently evaluating needs.
Southern Latex	Austell	Latex	Following notification from Ga.W.Q.C.Board treatment facilities were renovated and application for permit is now under review.
COWETA COUNTY AREA			
Bibb Manufacturing Company (Arnall Mill) Sargent	Sargent	Textile	Primary plant in existence, upon completion of stabilization pond at Arnco Mill, secondary treatment will be provided at Arnall Mill.
Bibb Manufacturing Company (Arnco Mill)	Sargent	Textile	Plans approved, permit issued by Ga.W.Q.C.Board, stabilization pond should be under construction at this time.
Wm. L. Bonnell Company	Newnan	Aluminum anodizing	On notice from Ga.W.Q.C.Board to comply with Georgia Water Quality Control Act, plant engineer has agreed to evaluate existing condition with view to providing necessary improvements.
Flagg-Utica	Grantville	Textile	Following notification to comply with the Ga.W.Q.C. Act, this operation is negotiating to divert their waste to municipal system.
Newnan Mills	Newnan	Textile	Following notification to comply with Ga.W.Q.C.Act, arrangements are being made to divert this waste to Newnan's system.
TROUP COUNTY			
U.S.Rubber Company	Hogansville	Textile	City of Hogansville has agreed to accept this waste in municipal system.

NAME OF INDUSTRY	LOCATION	TYPE OF INDUSTRY	PRESENT STATUS & COMMENTS
HARRIS COUNTY			
Valley Products Company	Pine Mountain Valley	Poultry processing	On notice to comply with Ga.W.Q.C.Act, consulting engineer has been retained.
COLUMBUS AREA			
Armour Agricultural Chemical Co.	Columbus	Fertilizer	On notice to comply with Ga.W.Q.C.Act, laboratory studies being conducted on waste.
Bibb Manufacturing Company	Columbus	Textile	Officials of the City of Columbus and management of the Mill have advised that this waste will be discharged to a municipal sewer within the next six months.
STEWART COUNTY			
Camillia Mining Company	Lumpkin	Iron ore washing	At request of Georgia W.Q.C. Board treatment facilities installed and a permit issued.
Davis Bros. Mining Company	Lumpkin	Iron ore washing	At request of Georgia W.Q.C. Board treatment facilities installed - application for permit is in preparation.
Dunbar-Layton Mining Company	Lumpkin	Iron ore washing	At request of Georgia W.Q.C. Board temporary facilities have been provided - plans in progress for permanent facilities.
Lee Mining Company	Lumpkin	Iron ore washing	At request of Georgia W.Q.C.Board treatment facilities have been provided - application for a permit being filed.
Lumpkin Mining Company	Lumpkin	Iron ore washing	At request of Georgia W.Q.C.Board treatment facilities have been provided and permit issued.

NOTE: Prior to 1965 approximately 3,000 tons per day of mud and silt were being discharged to tributaries of Walter F. George Reservoir from Stewart County mining operations. This has been reduced to less than 100 tons per day.

MR. HOWARD (Continuing): I would like now to just comment on the Report in general and the conference in particular.

The Report considered in some detail the occurrence of low oxygen concentration in the deep reservoirs and the discharge therefrom but, since the matter is not again referred to in the Summary and Conclusions nor the Recommendations, it is implied that low oxygen levels are entirely the result of upstream discharges of sewage and industrial waste.

It is our opinion that a very significant demand is made upon the oxygen resources of the river by the various impoundments, per se, and particularly the Walter F. George Reservoir. It is our further opinion these demands are less related to municipal and industrial waste than to other causes.

Information and time have not permitted a detailed analysis, but all data available indicate there is sufficient oxygen in the upper areas of the Walter F. George Reseroir to completely satisfy the demand of the intentionally introduced waste passing through those areas and still leave a satisfactory residual. Notwithstanding, the Report shows that the river is consistently deficient in oxygen below the Walter F. George Dam and, during the period of survey, the oxygen concentration was found to be as low as 0.8 mg/l at Fort Gaines, two miles below the Dam.

This condition occurs in deep reservoirs, where water is discharged from the lower levels, even when little, if any, man-made waste is discharged into the reservoirs. This is considered to be caused by the decomposition of bottom sludges which, in turn, are deposited by the sedimentation of algal cells and organic detritus brought into the reservoir by surface runoff. This decomposition results in the depletion of oxygen in the deep stratum which, due to thermal stratification, is not reaerated by mixing with the oxygen-rich overlying strata or by surface reaeration.

This deoxygenation of the lower stratum is not necessarily objectionable and may, in fact, be desirable as long as the oxygen-deficient water is confined to the deep portions of the reservoirs and is not discharged downstream. The difficulty develops when, through low-level intakes to turbines, or other means, the oxygen-deficient water is discharged downstream where, for a distance of several miles it may constitute the entire stream flow. In so far as the oxygen needs of the stream are concerned, the effect is no different whether a deficiency is caused by low-level turbine discharge or by an excess of man-made wastes.

The effects of the Walter F. George Dam are described in the narrative sections of the Report and are very clearly illustrated in Figure 5. The upward slope of the iso-oxygen curves near the dam dramatically demonstrates how the bottom pool of cold oxygen-deficient water is being swept into the turbine intakes while a huge overburden of warmer oxygen-saturated or super-saturated water is retained in the reservoir.

It is fully recognized that the matter of oxygen depletion, resulting from multi-purpose deep reservoirs, is receiving a great deal of study and that no easy solution to the problem has as yet presented itself. Nevertheless, it is our belief and recommendation that the findings of this Conference should recognize that degradation of the Chattahoochee River does result from operation of the impoundments and that corrective measures must be applied.

CHAIRMAN STEIN: Do you want to comment on that? You know, I am beginning to feel like the General, Rock, when I consider the industrial and municipal pollution loads and the space that has been given to the Corps of Engineers on discharges from impoundments. I don't think we can equate them. I understand how he feels. I hope this isn't getting out of perspective.

MR. HOWARD: I think there has probably been too much said about it in the initial Report probably, and my statement too, but we anticipate that we are going to have a lot more water resources development projects and that we will have to solve that problem and face up to it, --

CHAIRMAN STEIN: Right.

MR. HOWARD: -- especially with the fact we have the West Point Reservoir.

There is one other point I want to make. It is true that the Corps has to consider benefit-to-cost ratio in their projects, as I understand it. But in the Federal Government's law, as I understand the whole situation, they don't care what the benefit-to-cost ratio is as far as industrial pollution or pollution from municipalities. And so you see there are two sides to the question.

CHAIRMAN STEIN: Well, I would agree with you on your second point. We are asking the municipalities and the industries, without regard to cost-benefit ratio, to clean up. I would say from our point of view we would ask the Corps, while they may have a different point of view, to adopt the same viewpoint. They may or may not agree with this.

But to equate discharges from oxygen-deficient strata of a Corps of Engineers' reservoir to the degradation of the Chattahoochee River that you get from your municipal and industrial complexes along the river is like comparing a pea to the earth.

We have to clean that up.

This is a very difficult, intriguing technical problem that we have to solve. But what is ravaging that river is the municipal and industrial waste discharges, not the Corps of Engineers impoundment. I think we have to recognize that.

MR. HOWARD: We do.

CHAIRMAN STEIN: We just shouldn't lose that perspective.

And I am with you any time we have to go before the Congress or before our committees to get money that the Corps will have to oxygenate that waste.

MR. HOWARD: I am with you.

CHAIRMAN STEIN: That is not the major source of pollution in the river.

MR. HOWARD: I am with you. We think that the culprits, the ones we give top priority to, are the cities and the industries. But I bring that out.

GENERAL WALKER: May I make one point?

CHAIRMAN STEIN: Go right ahead.

GENERAL WALKER: I agree with you in this matter. Certainly the municipalities and industries are not equating costs to recognizable benefits.

I was particularly impressed, I might say, by the West Point-Pepperell statement that they were spending $250,000 a year I think without an appreciable or recognizable return.

I am asking, though, that the experts in this field try to give us some handle that we can get onto, as best we can, to recognize the work of this oxygen content in the short stretch below the dam.

Frankly, there are pro's and con's. We mentioned cool waters a moment ago. The fishing, and so forth, that we get by benefit of the cold water releases from Buford are an asset. If we warm those waters by pulling them from the top, we lose that.

Secondly -- and you all are better experts than I am on this, certainly -- it is my understanding that the cold water flows have a great deal faster reaction in the decontamination of the pollution than warm water. So we have got a benefit in this pollution abatement by releasing cold waters which come from the bottom of the Reservoir.

I don't want to be stubborn on the thing and say we have to have dollar-for-dollar, but I am asking for a handle we can use to justify our expenditure.

CHAIRMAN STEIN: General, let me point out that we must from our point of view, so as not to mislead you, apply the same rule to everyone -- every discharger.

In trying to check the cost-benefit ratio, we have heard every city and municipality that we have gone into say they just "polluted a little section of the stream" below them and then "it recovered."

General, we do not apply those rules just to cities and industries. The Congress has made that as a definite rule. Of course, the Congress will ultimately make this determination, but I will say from our point of view we are not going to apply a different rule in pollution control to any Federal installation, whatever it is -- including the Department of Interior, Department of Health, Education and Welfare, a Veterans Administration building or a Corps of Engineers impoundment -- than we would to any city or industry that we are dealing with on a stream.

In other words, we think that the Chattahoochee River is a major natural resource in the southeastern part of the country. This very well may be the largest river in terms of the use you have for it. At least, it is one of the major rivers.

We believe that, under the law, our charge (the job we have) is to keep the water quality in this river available for the maximum number of uses.

In the past, we have had our differences with some agencies. By the way, the Corps of Engineers is not one of them. Again, as I say, this is because they are a water-oriented agency, and understand the problems. We have had differences with the AEC, for example, in promoting the thermonuclear industry.

We can't see applying any different rule in relation to cost-benefit to a Federal agency than we do to a city, municipality or industry.

In addition, according to the President's Directives, we have to be, as far as results are concerned, more exacting and more stringent.

Again, this does not say that we are not flexible. As an old bureaucrat I understand your problems in complying with the law, because I have them all the time in getting budgets and working the projects through.

Although we are flexible and understand your problems in complying with the law, I think we are faced with a problem in dealing with the Corps or any other Federal agency in asking for clean water, but we have no other place to go.

Mr. Howard.

GENERAL WALKER: One last word if I may.

MR. HOWARD: Let me make a comment. You are taking all my time, Murray. (Laughter)

CHAIRMAN STEIN: You have all the time in the world. We are not going to cut you off.

MR. HOWARD: The reason this Report is brought to your attention is that this Federal Report on Pollution published by the Public Health Service infers that the DO deficiency was caused by waste alone, you see. But then they go on and mention that about the problem.

Now, I really think at this point, if we added up all the assets and adverse effects, we would probably come out that the reservoir is a net benefit in many ways.

CHAIRMAN STEIN: Yes.

MR. HOWARD: But we brought it up because of the fact that this Report infers the DO deficiency was caused by waste alone, and also we realize that we have other problems coming up in the future.

CHAIRMAN STEIN: General Walker.

MR. HOWARD: I would like to correct something. Our Water Quality Control Board requires secondary treatment, and extended aeration has been approved by the Federal Water Pollution Control Administration as secondary treatment.

CHAIRMAN STEIN: Have we? Wait a minute. Let's settle this. As far as I know, we make a judgment on a grant that it is at least primary. Have you ever made a judgment that extended aeration was secondary treatment?

MR. ROGERS: Somewhere in between. I think we would recognize this as something better than primary.

CHAIRMAN STEIN: This is just for the record.

MR. HOWARD: In terms of BOD reduction, and so forth, it could be considered that. There is no fine line on secondary treatment.

CHAIRMAN STEIN: No, but I should make this clear: Under the Federal regulations, under the law, in order to be eligible for a grant, you have to provide at least primary treatment. As far as I know, the only judgment that these people make when they make a grant is that you have at least primary treatment. That doesn't mean that it's necessarily --

MR. ROGERS: Let me correct this. Let's say this is under Public Law 660.

CHAIRMAN STEIN: Yes.

MR. ROGERS: This does not apply to some of the other Federal agencies.

CHAIRMAN STEIN: General?

GENERAL WALKER: One of my problems is I have been talking too much. Very likely I should have stopped before my last statement, because you left us on a very fine note when you were talking about the perspective of this proposition. But I wanted to correct perhaps an erroneous impression I made.

We are looking for a way to participate and to help. We know we are not being negative and resisting and saying we have got to have dollar for dollar. We are looking for a way, and I think you have given us some fine ideas.

CHAIRMAN STEIN: Thank you.

Mr. Howard.

MR. HOWARD: I will continue.

The Report devotes considerable space to the results of special detection studies for Salmonella bacteria in certain segments of the river below sewage discharges. It should be noted that such studies are not made in routine water quality surveys. The presence or absence of Salmonella bacteria at any location at the particular time of sampling is not significant in the control of water quality. If the coliform group is found, particularly fecal coliform, it must be assumed that any specific water-borne pathogen may be present at any time carriers of that organism happen to be on the sewage shed. In other words, any water in which sewage bacteria are known to exist should be assumed to contain pathogens and should be treated accordingly.

In reference to the General Recommendations of the Report, Items 2, 3 and 4, under the Georgia Water Quality Control Act, all domestic sewage and industrial waste are required to have the equivalent of secondary treatment. Some installations presently discharging sewage to tributaries of the Chattahoochee in the Atlanta area have been required to provide tertiary treatment within the past year. The rules and regulations of the Board prohibit the installation of combined sewers. We are pleased to note that the general recommendations of the Report closely parallel the requirements of the State Water Quality Control Board.

It is our sincere hope that the Report and this conference will accelerate our program of pollution control on the Chattahoochee River and its tributaries. It is regrettable that we received sufficient copies of the Report only one week prior to this meeting. So we have actually had less than one week to prepare this statement and to furnish copies of the Report to all interested parties. Our sincere regrets to all communities, industries, and others are offered for this delay in supplying copies of the Report.

The Georgia Water Quality Control Board considers that a reasonable, practical program has been developed for pollution abatement on the Chattahoochee River. The Board will continue to pursue vigorously the objective to provide water of satisfactory quality to meet the demands of all reasonable and legitimate uses.

Finally, in accordance with Section 1(b), Declaration of Policy, and Section 10(b) of the Federal Water Pollution Control Act, as amended, we recommend that this Conference endorse the pollution abatement programs of Georgia and Alabama for the Chattahoochee River and that this conference be declared adjourned sine die.

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EXHIBIT "A"

CORRESPONDENCE WITH LOCAL GOVERNMENTAL BODIES IN THE CHATTAHOOCHEE RIVER BASIN BETWEEN BUFORD AND FORT GAINES

INDEX

Local Governmental Body	Date	Writer
Atlanta	May 19, 1966	Robert H. Morriss, Asst. Chief of Construction, (enclosing Resolution of Board of Aldermen of May 16, 1966)
Austell	October 5, 1965	Joe Warrenfells, City Mgr.
	January 3, 1966	Wesley B. Williams, Ga. W.Q.C. Bd.
	January 4, 1966	Joe Warrenfells, City Mgr.
	January 11, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C.Bd.

Local Governmental Body	Date	Writer
Clarkdale	April 20, 1966	Guy E. Lowe, Chief Engr., Coats & Clark, Inc., Toccoa
Columbus	November 12, 1965	Robert L. Bates,Jr., Ga. W.Q.C. Bd.
	December 8, 1965	J.T. King, Sec., Bd. of Water Comm.
	January 31, 1966	R.S. Howard, Jr., Exec.Sec., Ga. W.Q.C. Bd.
	April 5, 1966	J.T. King, Gen. Mgr., Columbus Water Works
	June 9, 1966	R.S. Howard Jr., Exec. Sec. Ga. W.Q.C. Bd.
	July 5, 1966	J.T. King, Sec., Bd. of Water Comm.
Douglasville	July 11, 1966	Wm. J. Greene, Jr., Partner, Wiedeman & Singleton, Engineers
Fort Gaines	June 13, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C.Bd.
	June 30, 1966	David Wetherby, M.D., Mayor
Franklin	February 7, 1966	R.S. Howard, Jr., Exec. Sec., Ga.W.Q.C. Bd.
Fulton County	June 23, 1966	Archie Lindsey, Chm., Bd. of Comm.
	June 24, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C. Bd.
Grantville	December 9, 1965	C.S. Smith, Mayor
	June 27, 1966	R.D. Hazen, Design Engr., J.B. McCrary Co., Inc.
Hogansville	October 21, 1965	Wm. J. Greene, Jr., Partner, Wiedeman & Singleton, Engineers
LaGrange	September 16, 1965	H.B. Lovvorn, City Manager
Lumpkin	July 12, 1966	W.B. Singer, Mayor
Marietta	October 13, 1965	L.H. Atherton, Mayor

Local Governmental Body	Date	Writer
Newnan	October 22, 1965	Edgar B. Hollis, Chm., Newnan Water & Light Comm.
	February 2, 1966	R.C. Kauffman, Partner, Wiedeman & Singleton, Engineers
	June 13, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C. Bd.
	June 20, 1966	Edgar B. Hollis, Chm., Newnan Water & Light Comm.
	June 21, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C. Bd.
	June 22, 1966	Edgar B. Hollis, Chm., Newnan Water & Light Comm.
Palmetto	June 24, 1966	J.H. Temples, Engr., J.B. McCrary Eng. Corp.
	July 6, 1966	Robert Steed, Mayor
Pine Mountain	June 13, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C. Bd.
	June 16, 1966	O.E. White, Mayor
	July 12, 1966	O.E. White, Mayor
Smyrna	June 16, 1966	R.S. Howard, Jr., Exec. Sec., Ga. W.Q.C. Bd.
	June 30, 1966	Robert L. Sutton, Engr., Hensley-Schmidt, Inc.
West Point	February 3, 1966	John C. Barrow, Mayor
	June 22, 1966	Herman Granberry, Mgr., West Point Mfg. Co.
	July 9, 1966	John C. Barrow, Mayor

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CITY OF ATLANTA

DEPARTMENT OF CONSTRUCTION

301 City Hall

Atlanta 3, Georgia

May 19, 1966

Mr. R. S. Howard, Executive Secretary
Georgia Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia

Dear Mr. Howard:

Please find enclosed a certified true copy of a resolution adopted by the Board of Aldermen on May 16, 1966, and approved by the Mayor on May 18, 1966, which provides the commitment that you requested in a recent meeting.

I trust that this will satisfy your immediate requirements in this regard and will enable you to give the Federal agencies concerned a somewhat more positive answer regarding the proposed development of sanitary sewer outfalls in portions of the Atlanta Metropolitan Sewer System.

Your consideration and assistance in this regard will be greatly appreciated.

Yours very truly,

Robert H. Morris (Sgd)
Asst. Chief of Construction

RHM:mm
Encl.

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CITY OF ATLANTA

DEPARTMENT OF CITY CLERK

101 City Hall

Atlanta 3, Georgia

STATE OF GEORGIA)
) CITY OF ATLANTA
COUNTY OF FULTON)

I, MARON A. BLACK, do hereby certify that I am the duly appointed Deputy Clerk of the Board of Alderman of the City of Atlanta, Georgia, and as such am in charge of keeping the minutes of the Mayor and Board of Aldermen of said city; that the attached two (2) sheets are a true and correct copy of A Resolution By Public Works Committee # 2 approving construction of the Water Pollution Control Facilities scheduled in the Wiedeman & Singleton report subject to adjustment herein set forth, Adopted by Board of Aldermen on May 16, 1966 and Approved by the Mayor May 18, 1966, all as the same appears from the original, which is of record and on file in my said office.

GIVEN under my hand and seal of office on this 18th day of May, 1966.

Marion A. Black (Sgd)

DEPUTY CLERK OF THE BOARD
OF ALDERMEN

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A RESOLUTION

BY: PUBLIC WORKS COMMITTEE NO. 2

WHEREAS, it is mandatory that the City of Atlanta advise the Georgia State Water Quality Control Board of their plans and intentions regarding the abatement of serious water pollution control problems in the Atlanta Metropolitan Area; and

WHEREAS, Wiedeman and Singleton Engineers have submitted an engineering report under the date of December 30, 1965 entitled "Water Pollution Control for the Chattahoochee River" which outlines a schedule of construction extending from January of 1967 through January of 1973 for improvements at the Clayton, Sandy Creek, and Utoy Creek Water Pollution Control Plants; and

WHEREAS, the State Water Quality Control Board in a letter dated March 1, 1966, commenting on this report requested that the schedule above mentioned be adjusted to provide secondary treatment for all effluents on the Chattahoochee River prior to July 1, 1971; and

WHEREAS, the City of Atlanta by resolution approved February 9, 1966, authorized the firm of Management Science Atlanta, Inc., to provide a well coordinated schedule for the accomplishment of a major Capital Improvement Program for Water Pollution Control Facilities including those projects scheduled in the

Wiedeman and Singleton Report above mentioned:

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Board of Aldermen of the City of Atlanta that the construction of the Water Pollution Control Facilities scheduled in the Wiedeman and Singleton Report above mentioned is hereby approved subject to the adjustment to include secondary treatment of all effluents by July 1, 1971, as the latest date by which such projects will be completed.

The City of Atlanta herein commits itself to provide the necessary financing through Sewer Revenue Bonds, General Obligation Bonds or whatever other means be necessary to accomplish this program and to put into operation the plants above mentioned on or before the dates indicated.

The City of Atlanta further commits itself to provide the Georgia State Water Quality Control Board with a more complete schedule for the total accomplishment of the Capital Improvement Program above mentioned as that scheduling can be completed. It is agreed herein that in no case will this detailed schedule reflect starting and completion times later than those presented in the Wiedeman and Singleton Engineering Report.

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CITY OF AUSTELL
Austell, Ga.

Oct. 5, 1965

Mr. R. S. Howard, Jr. Exec. Secretary,
State of Georgia
Water Quality Control Board
Atlanta, Ga. 30334

Dear Mr. Howard:

In answer to your letter of April 27 regarding the City of Austell's plans toward the abatement of waste discharges into Sweetwater Creek, please be advised that the following action was taken at the regular October meeting of the Mayor and Council, said meeting being held October 4, 1965.

1. A proposed completion date of July 1966 was set for the preliminary plans.

2. After discussion of the problem of pollution, it was decided that the City of Austell would do everything financially possible to bring its sewage treatment facilities to the highest proficiency level known.

3. It was decided, that by necessity, the City would request funds authorized under P.L. 660 Federal Grant.

4. A preliminary time schedule of anticipated dates for completion of the phases of the program is as follows.

Preliminary plans	July 1966
Complete Plans & Spec.	July 1967
Construction	July 1968

As mentioned in No. 2 above, the City of Austell is fully aware of the grave problem of water pollution. Furthermore, the City intends to update its sewage treatment facilities to such an extent that it cannot be accused of polluting, in any way, the streams of the fine State of Georgia.

Sincerely,

Joe Warrenfells (Sgd)

City Manager

cc: Mr. James L. Ledbetter, Engineer

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue S.W.
Atlanta, Georgia 30334
January 3, 1966

Mr. Joe Warrenfells, City Manager
City Hall
Austell, Georgia

Re: Austell, Georgia Sewerage System

Dear Mr. Warrenfells:

In reference to our telephone conversation on December 30, 1965, it was certainly nice to hear that the City anticipated improving their proposed program of providing complete sewage treatment. As was discussed, we would appreciate another letter from you setting forth your anticipated new schedule of construction.

With reference to our discussion on the coliform bacteria counts in Sweetwater Creek and downstream water supplies, it is our recommendation that the City proceed at once with providing chlorination of the existing primary treatment plant effluent. We feel that this is necessary as an interim measure until the City can complete the proposed upgrading of treatment. Chlorination will be required, of course, even with complete treatment.

As the first step toward implementing a chlorination program, it is recommended that you authorize your consulting engineers to proceed with the design of the chlorination facilities and that the City furnish us with a statement on an anticipated date of completion.

We shall expect to hear from you in the next few days regarding the above matters. If you or your consulting engineers should wish to discuss our requirements in more detail or if we can be of assistance in any way, please do not hesitate to advise us.

Sincerely,

Wesley B. Williams, Director
Water Quality Control Service

WBW:rb

cc: Cobb County Health Dept.
Hensley Schmidt, Inc.

Attn: Mr. Bob Sutton

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CITY OF AUSTELL

Austell, Ga.

Jan. 4, 1966

Mr. Wesley B. Williams, Director
Water Quality Control Service,
Atlanta, Ga. 30334

Dear Mr. Williams:

Reference is made to your letter of Jan. 3, 1966 concerning proposed improvements to the City of Austell's sewerage system. In answer to your first request concerning the revised schedule of improvements, below please find said revision:

1. Presently in process of compiling necessary information for application of needed fund for planning.

2. If financially able, will proceed with plans and specifications by July 1966.

3. If financially able, will proceed with construction by July 1967.

With reference to our discussion concerning post-chlorination at the existing plant, please be advised that we will proceed with this project as quickly as possible.

In hopes that this meets with your approval, I am,

Yours truly,
Joe Warrenfells, (Sgd)
City Manager

cc: Mr. Bob Sutton

STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue S.W.

Atlanta, Georgia

January 11, 1966

Mr. Joe Warrenfells, City Manager
City of Austell
P.O. Box 263
Austell, Georgia 30001

Re: Austell Georgia Sewerage System

Dear Mr. Warrenfells:

We were pleased to receive your letter of January 4, 1966 confirming your revised and improved schedule for upgrading sewage treatment at Austell and your intention to provide post-chlorination of the existing plant effluent at an early date.

We invite you and your consulting engineer to confer with this office during the very early planning stages of improvements so that a mutual understanding can be reached on the problems involved. Please call on us if we can furnish additional information or be of assistance.

Our telephone number in Atlanta is 688-4033, extension 406.

Sincerely,

R.S. Howard, Jr.
Executive Secretary

RSH:WBW:rb
cc: Cobb County Health Department
Mr. Bob Sutton

COATS & CLARK INC.

TOCCOA, GEORGIA

April 20, 1966

State Water Quality Control Board
47 Trinity Avenue, S. W.
Atlanta, Georgia 30334

Attention: Mr. Charles H. Starling, Director
Water Quality Surveys Service

Re: Clarkdale Mill -- Waste Treatment

Dear Mr. Starling:

During our meeting in your office on April 12th, attended by members of the Georgia Water Quality Control Board; Mr. Williams of J. E. Sirrine Company, Consulting Engineers; Mr. Hilley and me, we presented our preliminary plans and specifications for the proposed additions to our waste handling system at our Clarkdale, Georgia Mill. After thoroughly reviewing the proposed additions, all was found to be completely acceptable to the Georgia Water Quality Control Board as a satisfactory method of solving our immediate as well as future known waste problems.

At the conclusion of the meeting J. E. Sirrine Company was authorized to proceed with detailed plans and specifications essential to the actual construction of the system. As soon as the plans and specifications have been prepared, we propose to submit them to Contractors for competitive bids and commence construction as soon thereafter as possible. It is impossible to predict an actual "start construction" date at this time; however, I think it reasonable to expect to begin construction during the middle or latter part of this year.

We again wish to thank you for your assistance and interest in this project.

Very truly yours,

COATS & CLARK INC.

Guy E. Lowe (Sgd)
Chief Engineer

GEL:EDW

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue SW

Atlanta, Georgia

November 12, 1965

Mr. J. T. King, General Manager
Columbus Water Works
1500 Thirteenth Avenue
Columbus, Georgia

Re: Progress Report and Projections
Sanitary Sewerage Facilities

Dear Thomas:

We certainly appreciate the courtesy and cooperation extended by you and your staff members to Mr. Ledbetter and me on our visit to Columbus last week.

Our discussion of your sewerage and sewage treatment problems and the work you have already undertaken to abate these problems was quite enlightening. We can certainly recognize and appreciate the magnitude of work already programmed by Columbus Water Works.

As we discussed last week, we feel that you will shortly be asked to consider providing secondary treatment facilities at the South plant, if not by our office then by the federal government. As we explained verbally, we are attempting to complete our files on the Chattahoochee by having each municipality and industry on the river write us a letter of description and intent concerning its sewerage facilities. We are hereby formally requesting that you submit such a letter for Columbus Water Works. We feel that your letter should properly comment on the following points:

1. History of sewerage and sewage treatment in Columbus and the role of Columbus Water Works in this field.

2. Construction projects recently completed, in progress, and programmed for the near future.

3. The financial condition of the Water Works; rate structure, indebtedness, ability to finance additional work, etc.

4. A statement of your awareness of the fact

that the river is still polluted and that a biological treatment process is needed at the South plant.

5. A realistic schedule for undertaking and completing preparation and implementation of plans for constructing secondary treatment facilities.

6. Your intention to apply for a PL-660 grant to help finance the project and the fact that you will have to have a grant to be able to adhere to the schedule outlined in point 5 above.

7. Any other points you might consider pertinent and deserving of comment.

We enclose herewith copies of the Georgia Water Quality Control Act of 1964 and Rules of this Division for your information and files. Should you wish to discuss our request or any of our requirements, do not hesitate to call on us.

Very truly yours,

Robert L. Bates, Jr.
Senior Engineer
Water Quality Surveys Service

RLB:mg

Enc:

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COLUMBUS WATER WORKS

COLUMBUS, GEORGIA

December 8, 1965

State Water Quality Control Board
47 Trinity Avenue S.W.
Atlanta, Georgia 30304

Attention: Mr. Robert L. Bates, Jr.
Senior Engineer
Water Quality Survey Service

Gentlemen:

We have your letter dated November 12th, 1965, regarding progress report and projections of sanitary sewerage facilities. We are pleased to advise you as follows:

1. In 1956 a bill was enacted by the General Assembly of Georgia amending the charter of the City of Columbus, Georgia, transferring the sewerage system both within and without the corporate limits of the City of Columbus to the Board of Water Commissioners of the City of Columbus, Georgia. This act gave the Board of Water Commissioners the supervision, control and management of all the facilities of the city both inside and outside the corporate limits of the city for the collection, treatment and disposal of sanitary sewage.

2. The Board of Water Commissioners immediately sold $1,000,000.00 in water and sewerage revenue bonds in 1957 to improve the sanitary sewerage collection

system. This program was completed in 1959. $100,000,000.00 in revenue bonds were sold to further improve the sanitary sewerage collection system in 1961. Due to the extensive needs, 3½ million dollars of revenue bonds were sold in 1962 to further improve the sanitary sewerage collection system, including the South Columbus Interceptor Line, the South Columbus Treatment Plant and the North Columbus Treatment Plant. These funds were supplemented with Public Health Service grants totaling $849,990.00. Additional bonds were sold in 1964 amounting to $7,000,000.00 with $4,425,000.00 of this amount earmarked for outfall sewers in the city and urban areas outside the city limits. Presently, we have committed under this program approximately 1¼ million dollars in construction, including the Bull Creek relief line as well as others to further improve the sewerage collection system. We are presently working on plans for further extensions in the sanitary sewerage collection system to be let to contract in the next few months, which will remove additional waste from the river and will require all the funds allocated from this issue.

3. The financial condition of the Columbus Water Works at this time is satisfactory to operate within our budgeted expenses by a very close margin. Our outstanding bond issues as of June 30th was $15,885,285.00

and the annual debt requirement for retirement of these bonds as shown in our 1965 budget is $990,760.00. The net revenue before debt retirement has to be 1-1/3 times the maximum principal and interest in any sinking fund year, which is $843,965.00 for the year 1990. Our construction program is proceeding at a maximum rate in order to meet required construction under the 1964 bond issues.

In view of the foregoing, I would not consider it expedient to ask my Board for any additional bond issues due to our inability to provide adequate coverage. We feel it compulsory to proceed with our present expansion program with funds available and not undertake any additional indebtedness until necessary.

4. We are not aware of the extent of pollution at the present time. Past reports have indicated that pollution was not serious and that if the river remained unimpounded that additional treatment would not be required until the middle of the 1970's. We would suggest that a very thorough and comprehensive study be made after all of our improvements, as well as others being instigated by your Board, are complete and industrial waste removed to determine the extent of pollution and provide reliable information for determining when and to what extend additional biological treatment would be required.

5. See answer to No. 4.

6. We have no immediate definite plans beyond the $7,000,000.00 expansion and improvement program presently in progress, however, in a growing community such as Columbus general planning is always under consideration.

We do sincerely appreciate your department's interest in pollution abatement and assure you of our continued cooperation with your department and other departments concerned with this matter.

Yours very truly,

BOARD OF WATER COMMISSIONERS

"Thomas King" (Sgd)

J. T. King
Secretary

JTK:bpk

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Ave. S.W.

Atlanta, Georgia 30334

January 31, 1966

Mr. J. T. King, General Manager
Columbus Water Works
P.O. Box 1600
Columbus, Georgia

Dear Mr. King:

We refer to our earlier correspondence of November 12, 1965, and to your reply of December 8, 1965.

We can appreciate the magnitude of sewerage construction completed in the past few years and programmed for the near future by Columbus Water Works. Bacteriological quality of the Chattahoochee River will continue to be seriously impaired, however, until all wastes discharged in the Columbus area are given secondary treatment and chlorination prior to discharge. Phenix City has provided secondary treatment. One of Fort Benning's plants provides secondary treatment and secondary facilities are being added to the other two plants.

The Federal Water Pollution Control Administration has made bacteriological studies on the Chattahoochee, above and below Columbus, to develop a case for interstate pollution. Should they call an enforcement conference their principal complaint will be that bacterial contamination from the Columbus area constitutes a public health hazard to navigation operations and to water contact sports on the Walter F. George reservoir.

The rules of the Georgia Water Quality Control Board require that all wastes be adequately treated prior to discharge and define adequate treatment as complete secondary treatment. In administering these rules statewide we must adhere to them uniformly in our dealings with all municipal and industrial polluters. We realize that abatement of Georgia's pollution problems cannot be effected immediately, but we are requesting each municipality and industry provide a written schedule for provision of secondary treatment as a first step in our continuing abatement program.

We request that you take this question up with the Board of Water Commissioners and that you furnish us, as soon as possible, a schedule of dates for undertaking and completing construction of secondary treatment facilities.

We appreciate your interest and cooperation. We will expect to hear from you soon. If you wish to discuss our request, feel free to call on us.

Very truly yours,

R. S. Howard, Jr.
Executive Secretary

RSH:RLB:mg

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COLUMBUS WATER WORKS

Columbus, Georgia

April 5, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Attention: Mr. R. S. Howard, Jr.
Executive Secretary

Gentlemen:

We have your letter dated January 31st, 1966, and your request for additional information contained therein has been discussed with the Board of Water Commissioners of the City of Columbus, Georgia.

As pointed out in our letter dated December 8th, 1965, in numbered paragraph four and our explanation thereof, we feel that our improvement program is moving at an accelerated rate to further reduce the discharge of sewage into the Chattahoochee River. We also feel that until our program is complete and other programs initiated along the Chattahoochee River north of Columbus are complete and industrial waste is removed, we will not have a true and accurate condition of the river; therefore until that time any additional treatment required, if any, can not be definitely established, programmed or planned.

As you know, our South Columbus Plant does not have biological treatment units but certainly should be considered more than "primary" treatment as facilities are provided for pre-aeration, chlorination and design factors are in excess of what is normally provided for "primary" treatment plants. Further, we would like to point out that the North Columbus Plant presently under construction will be complete treatment upon completion. The North Columbus Plant is scheduled for completion in mid-summer of 1966.

We again assure you of our cooperation and will be glad to discuss our full program with you and/or members of your staff at your convenience.

Yours very truly,

COLUMBUS WATER WORKS

"J. T. King" (Sgd)
General Manager

JTK:bpk

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Ave. S.W.

Atlanta, Georgia 30334

June 9, 1966

Board of Water Commissioners
City of Columbus
Columbus, Georgia

Attention: Mr. A. Illges, Chairman

Gentlemen:

Reference is to your letters of December 8, 1965 and April 5, 1966 addressed to the State Water Quality Control Board. Please refer to Item 4, page 2, of the December letter and to the second paragraph, page 1, of the April 5th letter.

Between Buford Dam and Columbus there are 15 industries and 17 municipalities with effluents to the Chattahoochee River. Fourteen of the towns have advised this office that they will provide secondary treatment. Thirteen of the 15 industries have advised us that they are proceeding with an abatement program. Industries and towns that have not submitted a schedule or plan for abatement have been advised that they must provide for secondary treatment in accordance with the requirements of the Georgia Water Quality Control Board. The municipal-industrial complex in Alabama, across the river from West Point, Georgia, is presently developing plans to provide biological treatment for all effluents. The City of Atlanta and Fulton County have submitted engineering reports and a schedule for providing secondary treatment plus disinfection for the municipal waste from Metropolitan Atlanta.

LaGrange, Georgia, presently has its biological treatment facilities under construction. You are probably aware that Phenix City, Alabama, provides secondary treatment for its wastewater. Fort Benning has two additional secondary treatment plants under construction at this time. The State of Alabama has advised that all municipal waste discharged to the Chattahoochee will receive biological treatment plus disinfection.

The Chattahoochee River is severely polluted below Atlanta but water quality surveys and data indicate that it has recovered and is of good quality at the Alabama-Georgia line (West Point). Data from samples taken at or near the Columbus water intake show that very good water quality prevails at this location. For example, the average total coliform count in this segment of the stream, from June 1, 1965 through November 30, 1965 came to 1250 MPN/100 ml. Other physical and chemical water quality criteria support the conclusion that the water coming to your city's intake is of good quality.

Unfortunately, the quality of the water below Columbus is not preserved. Available data reveal that the waste load from the Columbus area is degrading the stream below the City to a point above Fort Benning. Bacteriological analyses from points along this segment of the river indicate serious bacterial contamination. From June 22, 1965 through November 16, 1965 the average total coliform count amounted to 1,060,000 MPN/100 ml. Water of such quality is not satisfactory for such uses as boating, commercial navigation or fishing. Public health considerations require that the quality of the water along this section be improved.

In accordance with the Georgia Water Quality Control Act and because of the reasons outlined above, we must request formally that you furnish the State Water Quality Control Board a written schedule for providing secondary treatment plus disinfection for all of Columbus municipal waste.

Very truly yours,

R. S. Howard, Jr.
Executive Secretary

RSH:sj

COLUMBUS WATER WORKS

COLUMBUS, GEORGIA

July 5, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Attention: Mr. R. S. Howard, Jr.
Executive Secretary

Gentlemen:

Reference to your letter dated June 9th, 1966, we have studied the municipal and industrial waste in the areas served by the Columbus Water Works' sewerage system and would like to give you a summary report of the pollution abatement program recently completed and work now in progress.

In May 1965 the South Columbus Treatment Plant with a capacity of 25 MGD was placed in operation and at various dates since that time interceptors have been completed to bring additional waste to this plant. This includes the principal city interceptor that connects numerous outfalls to the system that at one time discharged raw waste into the river and other streams. This interceptor and outfall program is proceeding with three active contracts and two now in the design stage for early bids and this is to be followed at frequent intervals by other contracts looking forward to completion of the collection system program in 1968.

The North Columbus Treatment Plant is approximately eighty per cent complete and it is expected that this plant will go into operation during the fall of 1966. This plant will treat waste from an outfall now discharging raw sewage into the river and with the outfall contracts now under construction and scheduled, will complete collection and treatment of all municipal waste going to the river.

All principal industries contributing waste to the river have arranged to connect to the Water Works interceptor system except one and a study is being made by this industry to determine the most feasible method of treatment for its waste.

A development in a drainage area not previously developed is being constructed in Southeast Columbus and a separate treatment plant will be provided for this development with completion schedule in 1967. A few homes are being constructed in an area north of the presently served area that will require a separate treatment plant of a temporary nature. The outfall lines to serve this area are in the present program but cannot be scheduled until after these homes are occupied. This temporary plant will serve this development until the outfalls to connect it to the North Columbus Plant are complete, scheduled for 1968 or early 1969.

The above described program of work, completed, under construction and scheduled for approximately two more years, has required the expenditure of $10,000,000.00 of Water Works' capital funds with supplemental federal grant funds of $850,000.00 and also considerable funds provided by private developers. This commitment of funds has presently exhausted the bonding capacity of the Board of Water Commissioners. This Board has no taxing authority and must rely solely upon revenue from water and sewer charges as a source of income for all purposes including operation, maintenance and debt service. Present debt service is approximately one million dollars annually, incurred largely by the sewerage system improvement program.

With this heavily bonded indebtedness, it is difficult to predict when additional bonds will be marketed for a further improvement program due to the many indefinite factors involved and the uncertainty of economic conditions. Based on normal growth, a reactivation of Fort Benning to approximately its full capacity, and the availability of State and Federal grants for approximately 50 per cent of construction cost, it is estimated that a complete financial and feasibility study can be made in the early 1970's for financing a new program. Should this study be favorable, a new program could be undertaken at that time which could include additional treatment facilities at the South Columbus Plant that could be complete during the year 1973.

In the meantime, to improve the quality of the river below Columbus the Water Works will continue to practice chlorination of the South Columbus Plant effluent with facilities already available for this purpose. Chlorination will also be practiced at other treatment plants as a safety and disinfection factor.

We again assure you of our cooperation in the matter of pollution abatement.

Yours very truly,

BOARD OF WATER COMMISSIONERS

"J. T. King" (Sgd)
Secretary

JTK:bpk

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WIEDEMAN AND SINGLETON

Engineers

1789 Peachtree Rd. N.E.
Atlanta, Georgia 30309

July 11, 1966

Mr. R. S. Howard, Jr.
Executive Secretary
Georgia Water Quality Control Board
Room 636 State Office Building
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Re: Proposed Sewage Treatment Facilities
Douglasville, Georgia

Dear Mr. Howard:

Mr. James M. Haddle, Mayor of Douglasville, Georgia, has requested this office as Engineers for the City to advise you as to the present status of the proposed sewage treatment facilities for his municipality. This will also confirm verbal conversations between members of your organization and the Writer during the past few months.

A field survey has been completed for an interceptor sewer from the existing Imhoff Tank to a proposed site for a sewage treatment plant south of the city on Anneewakee Creek. This site is just east of Chapel Hill Road on the south side of the Creek, being a little over a half-mile below the Douglas County Water system's raw water intake on said Creek.

A sewage treatment plant located on this proposed site will allow for the treating of waste from a large area of the County proper which is presently unsewered. This area includes the communities of Midway and Clearview. An interceptor sewer from the county area would connect to the proposed city interceptor sewer to the proposed plant site.

The proposed interceptor sewer would parallel Little Anneewakee Creek until it got near the proposed plant site where it would then cut across bottom land to the larger creek. The two creeks converge approximately 2,000 feet below the proposed sewage treatment plant site.

The effluent from this propose sewage treatment plant would be discharged into Anneewakee Creek which flows directly into the Chattahoochee River.

The City of Douglasville is now in the process of securing an option on the proposed site. As soon as the option is secured, we will prepare a detailed estimate of cost of the proposed work. Then the matter of financing the project will have to be given serious consideration by the City. When this study has been brought to a successful conclusion, then the City will file an application through your Board for a 30% grant under the Federal Water Pollution Control Administration Grant Program. It is anticipated that this application will be filed within the next 90 days. Assuming that the city is successful in securing a grant, which it must have before any construction can be commenced, it is estimated that construction can be completed during 1970 and definitely not later than 1971.

We will keep you informed as to the status of this proposed work. Should you desire additional information, please advise.

Very truly yours,

WIEDEMAN AND SINGLETON

"Wm. J. Greene, Jr." (Sgd)

WJG:cg

cc: Mr. James M. Haddle
Mayor, Douglasville, Ga.

Mrs. Elma H. Shipp
City Clerk, Douglasville, Ga.

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Ave. S.W.
Atlanta, Georgia 30334

June 13, 1966

CERTIFIED MAIL

Honorable David Wetherby, M.D.
Mayor, City of Fort Gaines
Fort Gaines, Georgia

Re: Plans for Waste Treatment
City of Fort Gaines

Dear Dr. Wetherby:

The regular quarterly meeting of the Georgia Water Quality Control Board will be held at 11:00 a.m., July 7, 1966, in Room 317 of the State Health Department. Progress of our comprehensive program of pollution abatement along the Chattahoochee River will be considered at this meeting. We are again contacting all municipalities and industries along the river to obtain status reports prior to this meeting.

We appreciate the cooperation indicated in your letter of November 23, 1965. We request that you furnish us a copy of Robert and Company's engineering report on your sewerage system if the report is complete. We further request that you give us an estimated date for completion of construction of adequate treatment facilities. We would appreciate receiving your written reply by July 1, 1966, so that it can be reviewed prior to the Board meeting.

We offer our cooperation and assistance in planning and implementing your pollution abatement program.

Very truly yours,

R. S. Howard, Jr.
Executive Secretary

RSH:RLB:mg
cc: Robert and Company

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CITY OF FORT GAINES, GEORGIA

FORT GAINES, GEORGIA

June 30, 1966

Mr. R. S. Howard, Jr.
Executive Secretary
State Water Quality Control Board
Atlanta, Georgia

Dear Sir:

In November 1965 we outlined our plans for expanding the city water supply and improving our sewer system also. We signed a contract with Roberts & Company to do this work.

This project was started and we felt assured that with the new Economic Development Act of 1965 we could obtain a 50% grant and then borrow the remaining 50% to complete this entire project. When the State Director of the Economic Development Act learned that our extension would go to our industrial tract to serve a garment factory we were told not to apply for this money because they would not provide any assistance if the project in any way would aid the garment business here in Georgia. Therefore, having already committed ourselves to provide water and sewerage to Preferred Industries, we had to find other means of financing. We have sold $140,000 bonds to Byron Brooks & Co. of Atlanta, a private lending agency. In order to do this we have had to raise water rates and add a sewerage fee of $1.25 monthly.

Preferred Industries will start construction on their building as soon as the water and sewerage is installed, which should be in late September or October.

We have not abandoned plans for improving the city water or sewerage facilities. It is our intention now with Roberts & Co.'s help to again apply for funds through Economic Development Act of 1965 to completely redo the city's water system and provide a sewerage treatment plant. A great deal of preliminary work is already completed on this phase of improvements and we would hope by mid-1967 to have these plans finalized and provide water and sewerage to every citizen of Fort Gaines and also have an adequate sewerage treatment plant to serve our city for many years and thereby eliminate any pollution problem of the Chattahoochee River.

Very truly yours,

"David Wetherby, M.D." (Sgd)
Mayor, City of Fort Gaines

cc: Mr. Charles Smith
Atlanta, Georgia

STATE WATER QUALITY CONTROL BOARD

47 Trinity Ave. S.W.
Atlanta, Georgia 30334

February 7, 1966

Mr. A. P. Goodson, Mayor
City of Franklin
Franklin, Georgia 30217

Re: Sewage Treatment Plant
Operating Permit

Dear Mayor Goodson:

We have received your application for an operating permit dated January 28, 1966, and certification of Jordan, Jones, and Goulding, the designing engineers, that the facility was built in accordance with approved plans and specifications. We had previously inspected the plant and found it to be in satisfactory condition. We are pleased to issue to the City of Franklin a permit to operate a waste disposal system, pursuant to provisions of the Georgia Water Quality Control Act. One copy of the permit is enclosed; a second copy is being maintained in our permanent files.

The City of Franklin is to be commended for its progressive attitude and responsible action in abating pollution of the Chattahoochee River. If we may be of assistance in any way in assuring that optimum operation of your treatment plant is obtained, do not hesitate to call on us.

Sincerely,

R. S. Howard, Jr.
Executive Secretary

RSH:RLB:mg
Enclosure
cc: Jordan, Jones and Goulding
Heard County Health Department

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FULTON COUNTY

Atlanta, Ga.

June 23, 1966

Mr. R. S. Howard, Jr., Executive Secretary
State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Subject: Proposed Sewerage Improvements
Schedule for Implementation
Fulton County, Georgia

Dear Mr. Howard:

This will acknowledge your letters dated May 17 and June 13 inquiring as to the intention of the Fulton County Commission to implement the sewerage improvements outlined in the report received recently from Wiedeman & Singleton. The County Commission has accepted and approved the Wiedeman & Singleton report. However, the Commission does not have revenues currently available to implement the report. It will be necessary that bond issues be recommended to and approved by the voters of Fulton County before these improvements can be constructed.

Earlier this year the County Commission, in cooperation with the Mayor and Board of Aldermen of the City of Atlanta and the Atlanta Board of Education, appointed a Bond Study Committee to consider the need for another bond issue. The Committee determined that the most critical need at the moment was for bonds for the construction of school facilities for the City of Atlanta. This issue was presented to the citizens and approved in May. The Bond Study Committee now plans to review capital needs of the City of Atlanta and Fulton County during the balance of this year shooting for a bond referendum in the spring of 1967.

It is the County Commission's intention to recommend to the Bond Study Committee that the Phase I improvements in the Wiedeman & Singleton report be included in the 1967 bond referendum. Further study may also indicate the desirability of including certain of the improvements in Phase II. Because of the construction of the Owens-Illinois plant south of Fairburn, we will probably recommend that certain phases of the Whitewater Creek Interceptor System be included in the bond issue. However, further study of Phase II improvements is needed before the Commission is in a position to make firm recommendations.

In addition, Fulton County will also participate in improvements at the Utoy, Flint River, and Clayton plants which will be handled by the City. We are obligated to participate since we are a signatory of the Metropolitan Sewer Agreement.

In summary, the Fulton County Commission intends to implement the provisions of the Wiedeman & Singleton report dated December 30, 1965, recommending a program of sewerage system improvements just as expeditiously as the availability of bond funds permits. However, we are dependent on bond issues which must be approved by the voters for the construction of major sewerage system improvements. The Commission is conscious of the need for an abatement of pollution in our rivers and streams and we pledge our full support to your Board in its pollution abatement program.

We plan to have a representative at the July 7 meeting of the Water Quality Control Board.

Sincerely,

"Archie Lindsey"
Archie Lindsey, Chairman
Board of Commissioners

s.

cc: Harold F. McCart, Vice Chairman, Board of Commissioners
Jas. H. Aldredge, Commissioner
Alan F. Kiepper, County Manager
A. T. McDonald, Director of Public Works
J. F. Hackney, M.D., Commissioner of Health
Frank R. Fling, Clerk, Board of Commissioners
C. E. Drummond, Jr., Wiedeman & Singleton

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.W.

Atlanta, Georgia 30334

June 24, 1966

Mr. Archie Lindsey, Chairman
Board of Commissioners
Fulton County
165 Central Avenue, S.W.
Atlanta, Georgia 30303

Re: Proposed Sewerage System
Improvements
Schedule for Implementation

Dear Mr. Lindsey:

Please accept our appreciation for your letter of June 23, 1966 outlining the schedule for the proposed sewage improvements for Fulton County, Georgia.

As you are aware, this office has previously approved the Fulton County report prepared by Wiedeman and Singleton, engineers, dated December 30, 1965. The schedule for implementation recommended in this report is considered to be reasonable and practical for the water pollution abatement program for the Chattahoochee River.

The Board extends compliments to your Commission for the progress made on Fulton County's program and offers continued cooperation and assistance for a successful completion.

Sincerely yours,

R. S. Howard, Jr. (Sgd)
Executive Secretary

RSH:aj
cc: C.E. Drummond, Jr.

CITY OF GRANTVILLE

Grantville, Georgia

December 9, 1965

Mr. R. S. Howard, Jr.
Georgia Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia

Dear Mr. Howard:

This is to confirm that the City of Grantville signed an agreement with the J. B. McCrary Company, Incorporated of Atlanta to be consultants for the city's water treatment needs. This agreement was signed as of December 8th and the J. B. McCrary Company has agreed to start their survey on or before January 1st, 1966.

Our city council recognizes the need for the treatment of polluted water and the work on some type of treatment will be started as soon as feasible after the recommendations of the consulting engineers are received.

If you should need any other information, please let us know.

Very truly yours,

CITY OF GRANTVILLE

C. S. Smith, Mayor (Sgd)

CSS/mjb

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J. B. McCRARY COMPANY, INC.

Municipal Improvements

Atlanta 3, Georgia

June 27, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Attention: Mr. R. S. Howard, Jr., Executive Secretary

Re: Waste Treatment Facilities
Grantville, Georgia

Gentlemen:

On behalf of the City of Grantville, Georgia, we would like to reply to your verbal request relative to the status of the proposed Sanitary Waste Facilities for the City of Grantville.

We are presently in the preliminary phase of design for the proposed facilities and should proceed shortly with the necessary physical surveys. We will, of course, keep you informed of the progress and hope to have final design for your approval around the early part of 1967.

Yours very truly,

J. B. McCrary Engineering Corporation

"R. D. Hazen," P.E. (Sgd)

Design Engineer

RDH:bf

cc: City of Grantville, Georgia

WIEDEMAN AND SINGLETON

ENGINEERS

1789 Peachtree Rd., N.E.
Atlanta, Georgia 30309

October 21, 1965

Mr. R. S. Howard, Jr.
Executive Secretary
Georgia Water Quality Control Board
Room 636, State Office Building
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Re: Proposed Sewage Treatment Facilities
Hogansville, Georgia

Dear Mr. Howard:

We wish to answer the following questions requested of the City of Hogansville by your office pertaining to subject project.

1. The status of an engineering report or engineering plans and specifications -- as to whether these have been completed, prepared, or proposed.

Engineering report completed. Application for a Public Health Service grant to assist the City in the construction of this project was submitted to your office on April 28, 1965.

2. A time schedule listing anticipated dates for completion of phases of the program, such as engineering report, complete plans and specifications, construction of facilities to provide abatement of pollution.

Final construction plans and specifications pertaining to this project will be submitted to your office for approval within 90 days after the grant offer is accepted (Accepted 12/21/65), with the contract being awarded within 120 days after grant offer is accepted. Maximum construction time is 360 calendar days after award of contract.

Should additional information in this connection be desired, please advise.

Yours very truly,

WIEDEMAN AND SINGLETON

"Wm. J. Greene, Jr." (Sgd)

WJG, Jr/ghb

cc: Mr. Hamilton B. Ralls, Mayor
Mrs. Elizabeth I. Askew, City Clerk

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CITY OF LaGRANGE

LaGrange, Georgia

September 16, 1965

Mr. R. S. Howard, Jr., Executive Secretary
State of Georgia Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia 30334

Dear Sir:

We submit the following information in answer to the request from the Water Quality Control Board dated September 14, 1965 and presented to the City of

LaGrange by Mr. Robert L. Bates and Mr. James L. Ledbetter;

1. (a) The City of LaGrange has in hand an engineering report concerning an Industrial Waste Treatment Plant located adjacent to the present Blue John Sewage Treatment Plant.

(b) The City of LaGrange has in hand engineering drawings and specifications for the proposed Yellow Jacket Sewage Treatment Plant, however, some revisions to these drawings are now in process and will be completed about October 1, 1965.

2. The scope of work now contemplated will include:

(a) The construction of the Yellow Jacket Sewage Treatment Plant along with approximately 12,000 feet of 24-inch sewer outfall.

(b) The construction of the Blue John Industrial Waste Treatment Plant along with necessary outfall sewers.

(c) Additional heating and recirculating equipment for the present Hogansville Sewage Treatment Plant to improve treatment facilities at this Plant.

(d) Disposal of the starch waste problem originating at Pepperell Manufacturing Company, this waste now being trucked to the City sanitary land-fill.

3. (a) A P.L. 660 grant has been procured for the

Yellow Jacket Sewage Treatment Plant and the sewer outfall for this plant and an application has been filed for the Blue John Waste Treatment Plant.

4. The Yellow Jacket Plant and its outfall is programed to begin construction about January 1, 1966 with a completion date of approximately January 1, 1967.

The Blue John Industrial Waste Treatment Plant now is in the hands of Wiedeman and Singleton Engineers for design. This facility should be under construction by January 1, 1967 and completed approximately one (1) year later. The other work mentioned above in connection with the Hogansville Plant and the Pepperell starch waste should be completed by January 1, 1967.

5. Funds derived from a bond issue are now in the hands of the City of LaGrange and comprise the City's part of the money necessary to complete the above described work.

At this time, and to the best of our knowledge when these programs are completed all pollution from industrial and municipal sources will be abated.

Very truly yours,

"H.B. Lovvorn," (Sgd)
City Manager

CITY OF LAGRANGE

HBL:jc

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CITY OF LUMPKIN

Lumpkin, Georgia

July 12, 1966

Mr. Howard
Water Quality Control Board
State Health Dept.
Atlanta, Ga.

Dear Mr. Howard:

This letter is to inform the Water Quality Control Board of the steps taken and plans made to give our sewer system the proper treatment before dumping into a stream.

Since visiting your office last fall I have talked to the J. B. McCrary Engineering Co. of Atlanta and the Dean Engineering Co. of Albany, Ga. Our problem is basically the lack of funds to finance an engineering study, since both these firms require partial advance payment. The City of Lumpkin had no funds available during the fiscal year of 1965 & 1966 so I simply could not see no way to start any plans towards the solution of our problem.

I have also talked to Mr. Anderson who is in charge of the Farm Home Administration in Cuthbert, Ga. about the possibility of loan grant from his office. At the present time I have not received the proper forms from his office.

We appreciate the offer of your office to help our City in solving the pollution problem. I can also assure you that proper steps will be taken during the fiscal year of 1966-1967 to remedy the situation that is now prevalent.

Sincerely,

"William B. Singer" (Sgd)
Mayor

CITY OF MARIETTA

Marietta, Georgia

October 13, 1965

Mr. R. S. Howard, Jr.
Executive Secretary
State of Georgia
Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia

Dear Sir:

Our City Engineer, Mr. Don White, met with Mr. Ledbetter from your Office and discussed your plan for pollution abatement in the Chattahoochee River Basin. Mr. Ledbetter requested a letter from us giving certain information regarding our present sewerage system and treatment facilities, also our plans for the future. I hope the following information will be helpful to you.

At present we have five treatment plants, two of which are on the same site. Basically the treatment facilities are the same at all plants and consist of primary and secondary clarifiers, trickling filters, sludge digester, drying beds, and at the southeast side and new east side plants, chlorination of the overflow from the final clarifier.

Recently a comprehensive report on the Sanitary Sewer System of the Marietta Urban Area was prepared for us by Harland Bartholomew and Associates. Mr. Ledbetter was given a copy of the report when he met with Mr. White. This report is pretty thorough. It begins by reviewing our present facilities, estimates the pattern and rate of future urban developments and gives concrete recommendations for meeting the sewage facility needs for this development. We intend to follow the recommendations of this report as closely as possible, we urge you, therefore, to refer to it freely concerning Sewage Systems and Treatment Facilities in our area.

The report calls for immediate construction in two areas. In the Olley Creek district, an outfall line, pumping station and force main will be needed immediately. Preliminary plans for this work were received by the Engineering Department just last week. We hope, therefore, to begin construction on this project very soon.

The other area which needs immediate attention is the Sope Creek East District. In referring to the report, you will note that construction of an outfall line to a point east of the Old Canton Road is recommended. There temporary treatment, in the form of a sewer lagoon, would be needed. The field survey for preliminary plans on this project is under way at this time.

However, it now appears that it may be feasible to extend the outfall line downstream and build a permanent treatment plant. Several developers have approached us about the matter and it now seems likely that there will be immediate and intensive residential development on the downstream Sope Creek watershed. For this reason we have instructed the Consultant Engineers to extend the scope of their survey to include the downstream Sope Creek watershed all the way to the Chattahoochee River. At any rate, if a permanent treatment plant is built in the near future, it will probably be located just South of Lower Roswell Road or on the Chattahoochee River.

It almost goes without saying that the Board of Lights and Water will apply for any and all Federal or State aid that might be available under 660 or any subsequent legislation.

After this immediate construction we anticipate the necessity of expanding the facilities at the West Side Plant in about ten years. Beyond this, and excepting the areas previously mentioned, we anticipate no further need for treatment facilities within the scope of this report.

We, here in Marietta, are looking forward to working with you and doing our part in the plan for pollution abatement in the Chattahoochee River. We have long recognized that water pollution is one of the major problems this country faces today, and to the best of our abilities and resources we have tried to meet this problem. It is with pleasure, therefore, that we look forward to taking our place in a comprehensive plan that includes the whole river basin.

We will welcome any suggestions and/or recommendations concerning our present system or our plans for the future. We will be looking forward to hearing from you.

Sincerely yours,

"L. H. Atherton, Jr." (Sgd)
Mayor

LHA,Jr/es

cc: Mr. Don White

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NEWNAN WATER AND LIGHT
COMMISSION

Newnan, Georgia

October 22, 1965

Mr. R. S. Howard, Jr. Executive Secretary
State of Georgia
Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia 30334

Dear Mr. Howard:

One of your engineers, Mr. James L. Ledbetter, recently visited us and we were pleased to escort him on a tour of inspection of our facilities. He has, no doubt, filed his report.

In response to a request by Mr. Ledbetter, we are glad to supply further detailed information concerning our present sewage treatment facilities and to delineate something of our plans for the foreseeable future. We have three sewage treatment plants:

(1) Snake Creek Plant is modern and up to date in every respect and completely adequate for treatment of the sewage eminating from the drainage area for 20 years or more. This would depend, of course, upon the area growth.

(2) Cotton Mill Branch Plant: This is a complete treatment plant and is presently overloaded. The area within which the plant is located has built up to such an extent that constant maintenance of this facility is required. You will understand that this facility lacks the high efficiency we desire. We know that we shall have to face up to the necessity of relocating and building a larger treatment plant to serve this drainage area and we expect to pursue this matter when arrangements can be made to do so.

(3) Mineral Springs Branch: This plant is also complete as a treatment facility. It, too, is overloaded due to unusual growth within the drainage area. Maintenance and operation are diligently pursued until such time as a new and larger treatment plant can be built.

A preliminary survey is at present under way, by Wiedeman and Singleton, Engineers, with a view of abandoning this present plant, extending the interceptor sewer line approximately three miles further downstream and constructing a new treatment facility. We are told by the engineers that their recommendation will be either for a stabilization pond or a conventional treatment plant, whichever will be in the best interest of the Commission.

(4) South Side Area: Surveys, plans and specifications for lateral sewers, interceptor sewer and treatment facility for the south side of the City is in final state of development. It is anticipated the engineering plans and specifications will be submitted to the Georgia Water Quality Control Board for examination and approval within the next six (6) weeks. The project is scheduled for bids to be received and construction commenced as soon thereafter as is possible. Construction time will be approximately six (6) months.

A.P.L. 660 Federal Grant will be requested for all of the above sewage treatment facilities for the components which are eligible.

The Snake Creek Plant is tributary to Snake Creek to Wahoo Creek and thence to the Chattahoochee River.

The Cotton Mill Branch Plant is tributary to Wahoo Creek and thence to the Chattahoochee River.

The Mineral Springs Branch Plant is tributary to Mineral Springs Branch to Mountain Creek to New River and thence to the Chattahoochee River.

It is our hope that you will find consistent the deduction that the management of the Newnan Water and Light Commission is seriously concerned in ultimately meeting all of the requirements of the Georgia Water Quality Control Board.

Very truly yours,

NEWNAN WATER & LIGHT COMMISSION

"Edgar B. Hollis," (Sgd)
Chairman

EBH/sw

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OFFICE OF WIEDEMAN AND SINGLETON, ENGINEERS

P.O. Box 1678, Atlanta, Georgia 30301

February 2, 1966

Mr. R. S. Howard, Jr.
Executive Secretary
Georgia Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Re: Newnan, Georgia
Newnan Water, Sewerage and Light Commission
Existing Sewage Treatment Plants
Proposed New Sewage Treatment Facility
Report

Dear Mr. Howard:

Coincident with transmittal of seven sets of construction plans and specifications for the proposed new sewage collection system, interceptor sewers and sewage treatment facilities to serve the South Side Area of the City of Newnan, we submit herewith seven prints of a map of Coweta County upon which is indicated all of the existing sewage treatment plants presently serving and projected new construction to serve the City. In consideration of this map it might be well to review together with the two maps contained within our report of 1956, which was submitted to the State Department of Public Health, Water Resources Service, under date of April 23, 1956.

It is the intent of this letter to update certain information contained in our report of 1956, to describe the present locations and situations of the existing treatment plants, to state intent as to relocations of present plants and to state intent as to construction of future plants.

(1) Snake Creek Plant: The Snake Creek Plant is a modern complete treatment plant, suitable for treatment of sewage emanating from drainage area No. 1 for at least 10 years or more depending upon the area growth. The plant is designed for 0.4 MGD average rate and is arranged to be readily expandable to 0.8 MGD average rate. In view

of this no relocation or additional construction is contemplated for the Snake Creek Plant for at least ten years in the future.

The plant is located on Snake Creek, tributary to Wahoo Creek and thence tributary to the Chattahoochee River.

(2) Cotton Mill Branch Plant: The Cotton Mill Branch Plant is a complete treatment plant, constructed in the latter part of the 1930's. The plant is 30 or so years old, is grossly overloaded, is obsolete, is in a bad state of repair, and has served its original purpose. The plant presently receives practically all the sewage from drainage area No. 2, divided into sub-areas 2a and 2b. The plant, upon present-day standards, is apparently designed for 0.25 MGD average rate. No recent gaugings of the present average flow have been made. The area within which the plant is located has built up and the plant now constitutes a nuisance. It is proposed that this plant will be abandoned and a new complete treatment plant be constructed downstream. The new facility will be named the Wahoo Creek Plant. It is anticipated that construction plans and specifications will be under way by 1968 and construction commenced as soon thereafter as is possible.

The existing Cotton Mill Branch plant is located on Cotton Mill Branch, tributary to Wahoo Creek and thence tributary to the Chattahoochee River. The proposed relocation (Wahoo Creek Plant) will be located on Wahoo Creek and thence tributary to the Chattahoochee River.

(3) Mineral Springs Branch Plant: The Mineral Springs Branch Plant is a complete treatment plant constructed in the latter part of the 1930's. The plant is 30 or so years old, has reached the overload point, is obsolete, is in bad state of repair, and has served its original purpose. The plant presently received practically all the sewage from drainage area No. 5. However, there are 50 residential connections located within drainage area No. 4, the sewage from which is pumped over the ridge into the Mineral Springs Branch sewage system.

(Note that the pumping station in drainage area No. 4 is to be abandoned and the sewage emanating from the above-mentioned 50 residential connections is proposed to be connected by interceptor sewer and become a part of the proposed new South Side collection and treatment system).

The Mineral Springs Branch Plant, upon present-day standards, is apparently designed for 0.3 MGD average rate. Average rate of flow was measured in October 1964 and the rate was established to be 0.32 MGD. The area within which the plant is located has built up and the plant now constitutes a nuisance. It is proposed that this plant will now be abandoned and a new complete treatment plant be constructed downstream at the confluence of Mineral Springs Branch with Mountain Creek. It is anticipated that construction plans and specifications will be under way by 1971 and construction commenced as soon thereafter as is possible.

The existing Mineral Springs Branch Plant is located on Mineral Springs Branch, tributary to Mountain Creek, tributary to New River thence tributary to the Chattahoochee River. The proposed new location of the Mineral Springs Branch Plant will be tributary to Mountain Creek, tributary to New River and thence tributary to the Chattahoochee River.

(4) Proposed New South Side Sewage Treatment Facility: The seven sets of plans and specifications for the proposed New South Side sewers show the location of the collector sewers, interceptor sewers and sewage treatment facilities, submitted by separate letter for your review leading toward approval. The area which this facility is intended to serve lies within drainage area No. 4 and limited to that part of the area which lies within the city limits only.

The area 4 sewage pumping station is to be abandoned and the sewage from the 50 residential connections now served by the pumping station are to be connected by means of interceptor into the proposed South Side Sewage. Thus the Mineral Springs Branch Plant will be relieved of an equivalent population loading of 175 persons.

The proposed South Side Sewage Treatment Facility is specified and shown upon the plans to be of the extended aeration type having a holding capacity of 37,500 gallons, rated at 40,000 gallons, suitable for adequate treatment of sewage for a population equivalent of 400.

The present contributing population is broken down and described as follows:

Woodbine Subdivision

50 existing residential connections, presently being served by collection laterals and sewage pumping station

@ 3.5 persons per connection 175 pop.

Harvey North Park

Recreational park and water works plant 26 pop.

LAGRANGE STREET EXTENSION
SUNNY SOUTH SUBDIVISION
PART OF LAGRANGE HEIGHTS SUBDIVISION

78 existing residences served by septic tanks and tile fields.

Anticipated 26 immediate connections 91 pop.

@ 3.5 persons per connection

Anticipated equivalent population

loading (1967) 292

Anticipated equivalent population loading (1972)	345 pop.
Anticipated equivalent population loading (1977)	397

From the above, according to present-day standards criteria, the proposed facility will have reached its design loading approximately ten years beyond 1967. When this point is reached a second sewage treatment facility will be installed to be operated in parallel with the facility presently proposed.

The sewage to be treated is domestic and therefore assumed to have an average five-day BOD strength of 200 ppm.

Yours very truly,

WIEDEMAN AND SINGLETON

"R. C. Kauffman" (Sgd)

RCK:ms

cc: Mr. Edgar B. Hollis

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.R.

Atlanta, Georgia 30334

June 13, 1966

CERTIFIED MAIL

Mr. Edgar B. Hollis, Chairman
Newnan Water and Light Commission
Newnan, Georgia

Re: Improved Sewerage Facilities
Newnan, Georgia

Dear Mr. Hollis:

The regular quarterly meeting of the Georgia Water Quality Control Board will be held at 11:00 a.m., July 7, 1966, in Room 317 of the State Health Department. Progress of our comprehensive program of pollution abatement on the Chattahoochee River will be considered at this meeting. Should you desire to have representatives attend, they will be welcome.

Prior to this meeting we are again contacting all municipalities and industries discharging wastes to the Chattahoochee system, requesting they furnish us with updated status reports. We appreciate the cooperation indicated by your letter of October 22, 1965. We request that you furnish us with more definitive information as to a tentative schedule for construction of needed improvements particularly in the Cotton Mill Branch and Mineral Springs Branch areas. To permit us to evaluate your reply prior to the Board meeting, we would appreciate your furnishing it prior to July 1, 1966.

If we may be of assistance to you in any way in planning and implementing your program of needed improvements, do not hesitate to call on us.

Very truly yours,

R. S. Howard, Jr.
Executive Secretary

RSH:BLB:mg

cc: Windeman and Singleton
Coweta County Health Department

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NEWNAN WATER AND LIGHT COMMISSION

NEWNAN, GEORGIA

June 20, 1966

Mr. R. S. Howard, Jr., Executive Secretary
Georgia Water Quality Control Board
47 Trinity Avenue
Atlanta, Georgia 30334

Re: Newnan Sewage Treatment Plants

Dear Mr. Howard:

This will acknowledge and thank you for your letter of June 13. We should like to have representatives attend your meeting on July 7, and will plan accordingly.

You make reference to our letter of October 22, 1965. We are glad to update, as specifically as possible, our earlier report.

(1) Under date of April 13, 1966, we contracted with Arthur Pew Construction Company to build the Newnan South Side Sewerage System and Sewage Treatment Facilities. The contract price is $164,599.20. These plans were reviewed and approved by your office and construction, now under way, was begun on May 2, 1966. We anticipate that this sewerage facility will be completed in early 1967.

You will also be interested to know that on June 10, 1966, a contract was signed with the Republic Contracting Corporation, Columbia, South Carolina, for additions and improvements to our water filtration plant for the sum of $514,714.00.

At the same time, a separate contract was awarded R. D. Cole Manufacturing Company, Newnan, Georgia, for a new wash water tank at a cost of $10,450.00. We were unsuccessful in our efforts to secure grants-in-aid, but were able to sell water and sewer revenue bonds in the amount of $750,000.. This financing enables us to defray the cost of the above construction and provides approximately $60,000 in additional funds to cover the cost of relocating water and sewer facilities, made necessary by the coming of Highway 1-85.

(2) Snake Creek Sewage Treatment Plant: This plant was completed in 1962 at a total cost of $433,643.46. This facility is a modern, complete treatment plant, designed for suitable treatment of sewage from drainage area No. 1 for probably 20 years or more. This plant is so designed and arranged as to be readily doubled in size to 0.8 MGD average rate. In view of this, no additional construction is contemplated for the Snake Creek Plant in the foreseeable future. This plant is located on Snake Creek, tributary to Wahoo Creek, and thence

tributary to the Chattahoochee River.

(3) Cotton Mill Branch Plant: This plant is a complete treatment facility, presently overloaded and, by current standards, obsolete. Preliminary studies of this drainage area were begun some time ago. We consider it desirable that this plant will be abandoned and a new, complete treatment plant be constructed downstream. This new facility will be named the Wahoo Creek Plant. It is the purpose of our Commission to concentrate our efforts toward developing engineers' plans and specifications for this project. Before construction can begin, however, we must receive favorable consideration of our application for a grant-in-aid from the Federal Government. You will understand, from the foregoing, that we fully realize the need for this facility and that we have every intention of going forward with the project, as soon as our finances can be arranged.

(4) Mineral Springs Branch Plant: This plant has a slightly larger capacity than the plant described under item (3) above. It is, in general, however, overloaded and should be abandoned, as soon as a new treatment plant can be provided downstream. Our engineers have made preliminary studies and, as in the case of the Cotton Mill Branch Plant, we are working toward the filing of an application for a grant-in-aid.

It is our impression that our engineers, Wiedeman and Singleton, Atlanta, Georgia, have already furnished your office with a study of the growth pattern of the City of Newnan in recent years. Admittedly, we are not adequately equipped with sewage treatment plants. We consider this need to be urgent, but we have also before us the constant problem of additional water supply and the absolute need to stay fully abreast of the necessary expansion for our electric department. Incidentally, only this month we have completed construction of a new electric distribution station at an approximate cost of $125,000. If we have digressed from the subject of sewage treatment requirements, it is only in the hope that you will share with us the recognition of the financial pressure upon growing municipalities everywhere.

You realize, of course, that our location here in the Piedmont region, poses a problem that is not shared by municipalities located where the land is relatively flat. We know of instances where cities larger than Newnan can do nicely with one large sewage treatment facility. In our case, Newnan is located on a series of ridges, making five principal drainage areas within the city. The rolling contours result in numerous outfalls. Our location, therefore, though highly desirable in most respects, imposes a major financial burden, in connection with providing sufficient sewage treatment plants. We shall hope that the percentage of costs provided through governmental grants-in-aid will be sufficient to make possible the ultimate fulfillment of our needs in the area of sewage disposal.

In closing, we again express our desire to cooperate, as fully as possible. We seek your help and advice in meeting these critical needs of our community.

Yours very truly,

NEWNAN WATER & LIGHT COMMISSION

"Edgar B. Hillis" (Sgd)
Chairman

EBH/sw

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

June 21, 1966

Mr. Edgar B. Hollis, Chairman
Newnan Water & Light Commission
Newnan, Georgia

Dear Mr. Hollis:

Your letter of June 20, 1966 is acknowledged with appreciation. We are pleased to learn that Newnan will be represented at the Georgia Water Quality Control Board's meeting on July 7th.

Please be assured that we are not unmindful or unappreciative of your Commission's accomplishments in water pollution control and water supply services. We are sympathetic with the many public service problems of our rapidly growing cities. However, correcting the pollution problems on the Chattahoochee and its tributaries has become an essential and urgent matter that we cannot delay.

To protect existing and future legitimate and beneficial uses of this valuable water resources we must now have reasonable, realistic schedules for pollution abatement from all domestic and industrial sources of waste-water. The Federal Water Pollution Control Act passed in 1965 requires that Georgia set interstate standards on the Chattahoochee and all other interstate streams prior to June 30, 1967. Such standards must be for the purpose of enhancing the existing water quality and must be adequate to provide protection for future uses.

Another pressing need for abatement schedules involves the West Point dam and reservoir now under construction. This project is now scheduled to be ready for impoundment in 1971. To protect this reservoir for the uses it is designed to serve, it is imperative that all pollution upstream be controlled. There is also the matter of future water resources developments being planned between West Point and Atlanta.

This is to request once again that the Newnan Water and Light Commission furnish the State Water Quality Control Board with a schedule for a pollution abatement program to provide adequate treatment for all of Newnan's liquid wastes.

Very truly yours,

"R. S. Howard, Jr."
Executive Secretary

RSH:aj

cc: Wiedeman & Singleton Engineers
Attention: Mr. C.E. Drummond, Jr.

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NEWNAN WATER AND LIGHT COMMISSION

NEWNAN, GEORGIA

June 22, 1966

Mr. R. S. Howard, Jr., Executive Secretary
Georgia Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Re: Newnan Sewage Treatment Plant

Dear Mr. Howard:

Reference is made to your letter of June 21, 1966.

We are in complete agreement concerning the necessity for controlling pollution in the Chattahoochee River. As a matter of fact, we do not know of any community having greater interest in controlling this problem than does Newnan. The fact that we are well downstream from the principal sources of pollution does not influence the firmness of our intention to fully meet our responsibilities to provide adequate sewage treatment facilities for Newnan. However, we can not ignore the necessity of sound financial arrangements by which to provide the needed facilities.

Acting upon our request, our consulting engineers, Wiedeman and Singleton of Atlanta, submitted to you, through their letter of February 2, 1966, a full report on our existing and proposed new sewage treatment facilities. A photo copy of this report is enclosed. This report delineates our current status and long-range plans.

Meanwhile, our engineers will be engaged in the work of preliminary studies and surveys, leading toward the preparation of construction plans and specifications.

Yours very truly,

NEWNAN WATER & LIGHT COMMISSION

"Edgar B. Hollis," (Sgd)
Chairman

EBH/sw

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J. B. McCRARY ENGINEERING CORPORATION
MUNICIPAL IMPROVEMENTS
Atlanta, Ga. 30303

June 24, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Attention: Mr. R. S. Howard, Jr., Executive Secretary

Re: Waste Treatment Facilities
Palmetto, Georgia

Dear Mr. Howard:

On behalf of the City of Palmetto, Georgia and in due process of operation of the State Water Quality Control Board, we wish to make a report on behalf of the City of Palmetto, Georgia relative to the progress of their program of pollution abatement on the Chattahoochee River.

We have recently been employed as Engineers for the City of Palmetto to pursue the investigation and do the necessary engineering work in connection with their program. We have not as yet made the complete surveys that will be required in connection with their program but we have done considerable investigation regarding possible treatment facilities and we hope to be in position to have something concrete for review with your office within the next 90 days.

In the meantime, if there should be any

questions regarding any information that we may furnish, please call us.

Yours very truly,

J. B. McCRARY ENGINEERING CORPORATION

"J. H. Temples,"
Engineer

JHT:bb

cc: Fulton County Health Department
City of Palmetto, Georgia

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CITY OF PALMETTO

Palmetto, Georgia

July 6, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Ga.

Dear Mr. Howard:

We have employed the J. B. McCrary Engineering Corporation of Atlanta, Ga. to pursue the investigation and do the necessary engineering work to build a new disposal plant for the City of Palmetto.

As soon as they complete their work they will furnish you with more information regarding the work to be done by the city.

If there are any questions regarding this Waste Treatment Program, please contact them.

Yours very truly,

RS/ld

"Robert Steed" (Sgd)
Mayor

STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.W.

Atlanta, Georgia 30334

June 13, 1966

CERTIFIED MAIL

Mr. O. E. White, Mayor
Town of Pine Mountain
Pine Mountain, Georgia

Re: Waste Treatment Facilities
Pine Mountain, Georgia

Dear Mayor White:

The regular quarterly meeting of the Georgia Water Quality Control Board will be held at 11:00 a.m., July 7, 1966, in Room 317 of the State Health Department. Progress of our comprehensive program of pollution abatement on the Chattahoochee River will be considered at this meeting. Should you desire to have representatives attend, they will be welcome.

Prior to this meeting we are again contacting all municipalities and industries discharging wastes to the Chattahoochee River system and requesting they furnish us updated status reports. We refer to your letter of February 8, 1966, advising of your intention to cooperate, and to our letter of February 25, 1966, suggesting you retain an engineer to plan your program of improvements. We are now requesting that you furnish us a report on progress made since your February 8 letter and that you provide us a tentative schedule for constructing adequate waste treatment facilities.

To enable us to evaluate your status prior to the Board meeting, please furnish your written reply not later than July 1, 1966. We offer our cooperation and assistance in planning and implementing your needed program of improvements.

Very truly yours,

R. S. Howard, Jr.
Executive Secretary

RSH:RLS:mg

CC: Harris County Health Department

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OFFICE OF THE MAYOR AND RECORDER

TOWN OF PINE MOUNTAIN

Pine Mountain, Georgia

June 16, 1966

Mr. R. S. Howard, Jr., Executive Secty.,
State Water Quality Control Board,
47 Trinity Avenue, S.W.
Atlanta, Ga. 30334

Dear Mr. Howard:

In reply to your letter of June 13th. We have gotten in touch with J. B. McCrary Engineering Corp. and Mr. Temples will meet with our council at our July meeting. We expect this meeting to be held July 1st at 7:30 P.M. J. B. McCrary Engineering Corp.

were the engineers on our tank when it was built and they have been meeting recently with your board to make an effort to determine the most economical way to provide secondary treatment and at the same time, utilize as much of our existing facilities as seems to be economically feasible.

As soon as we have more specific plans, we will notify you further.

Yours truly,

"O. E. White" (Sgd)
Mayor

OEW:MA

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OFFICE OF THE MAYOR AND RECORDER

TOWN OF PINE MOUNTAIN

Pine Mountain, Georgia

July 12, 1966

Mr. R. S. Howard, Jr., Executive Secty.,
State Water Quality Control Board,
47 Trinity Avenue, S.W.
Atlanta, Ga. 30334

Dear Mr. Howard:

We have had Mr. Temples with J. B. McCrary Engineering Corp. down and we are figuring on making a survey of our town water works and sewerage plant and hope to have it started as quickly as possible, but we are sure we will have it completed by 1972.

Yours truly,

"O. E. White" (Sgd)

Mayor

OEW:MA

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.W.

Atlanta, Georgia 30334

June 16, 1966

CERTIFIED MAIL

The Honorable George W. Kreeger
Mayor of the City of Smyrna
City Hall
Smyrna, Georgia

Re: Water Pollution Control Facilities
Smyrna, Cobb County

Dear Mayor Kreeger:

All waste-water discharges to the Chattahoochee River, including those from the City of Smyrna, will receive primary attention at the Georgia Water Quality Control Board meeting on July 7, 1966, at 11:00 AM (Room 317, State Health Building). If you wish to have representatives attend, they will be welcome.

Even though certain improvements are being made at the Bohannon Creek Water Pollution Control Plant, the facility must be expanded and improved in other ways to provide the needed protection of Bohannon Creek, Nickajack Creek, and the Chattahoochee River. A determination is being made by this office on whether tertiary treatment will be required to protect downstream water uses.

For presentation at the Board meeting, we would appreciate receiving an official statement by July 1, 1966, that the City of Smyrna plans to initiate an engineering study of all water pollution control facilities and then to proceed with any needed construction. A tentative construction schedule would also be appreciated, if this is possible.

Sincerely,

"R. S. Howard, Jr."
Executive Secretary

RSH:JCM:rb

cc: Cobb County Department of Health
Hensley-Schmidt, Inc., Engineers

- - -

HENSLEY-SCHMIDT, INC.

Consulting Engineers

Emerson Building
Chattanooga, Tennessee

June 30, 1966

Mr. R. S. Howard, Jr.
Executive Secretary
State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Re: Water Pollution Control Facilities
Smyrna, Cobb County, Georgia

Dear Mr. Howard:

The Mayor and Council in the regular meeting on June 20, 1966 authorized Hensley-Schmidt, Inc., as Consulting Engineers to make an official statement to the Water Quality Control Board concerning Water Pollution Control Facilities operated by the City of Smyrna.

The City of Smyrna has completed a comprehensive study with recommendations for improvements of the sewerage system and waste treatment facilities. This report was presented to the Water Quality Control Board for review and comments. The recommendations presented were generally concurred by letter on March 19, 1965.

During the Fiscal Year 1966, the City authorized certain improvements to the Bohannon Treatment Plant. The improvements included the addition of a Grit Chamber and the renovation of Sludge Drying Beds.

Improvements to the Digesters at the Bohannon Plant are anticipated during the Fiscal Year 1967. Also an application for funds under the Public Law 660 has been filed with the Water Quality Control Board for the 1967 program.

A proposed construction schedule is set forth in the preliminary study and the implementation of this schedule is dependent on the allocation of funds from the P.L. 660 program. At that time, an evaluation of the construction schedule will be made taking into consideration the available financing at that time.

We will be happy to furnish any additional information as may be required. A representative in behalf of the City of Smyrna will be present at the meeting of July 7, 1966 to answer questions.

Sincerely yours,

HENSLEY-SCHMIDT, INC.

"Robert L. Sutton, Jr."
P, E.

RLSjr/cm

CC: Mr. George Kreeger
Les Charles
Cobb County Department of Health

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CITY OF

WEST POINT, GEORGIA

Water Works, Electric Lights and Sewerage

West Point, Georgia

February 3, 1966

State Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

Attention: Mr. J. L. Ledbetter, Engineer
Water Quality Control Service

Dear Mr. Ledbetter:

The City of West Point has received information from the Charles T. Main Company of Charlotte, North Carolina that they hope to have a preliminary plan by the first of March. The engineers expect to recommend a system that will give at least second degree treatment to all sewerage.

As you are aware this study is being made in conjunction with the City of Lanett and the West Point Manufacturing Company.

Due to the cost we will be forced to seek Federal assistance to finance this project. It is understood that Federal legislation has been passed that will give some assistance in these projects but we also understand that this legislation has not been implemented.

Our ability to provide you with a tentative schedule of action depends entirely on the engineering reports and our ability to finance these facilities.

Very truly yours,

CITY OF WEST POINT

"John C. Barrow" (Sgd)
Mayor

JCB/mjo

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WEST POINT MANUFACTURING COMPANY

Langdale, Alabama 36864

June 22, 1966

Mr. Joe Crockett
Alabama Water Improvement Commission
State Office Building
Montgomery, Alabama

Re: Waste Treatment in Valley Area

Dear Mr. Crockett:

About a year ago we engaged the firm of Chas. T. Main, Inc., of Charlotte, North Carolina, to make a study of our waste treatment problems. Later we asked them to also extend this study to include recommendations for treating the waste from the cities of West Point, Georgia, and Lanett, Alabama, as well as the towns of Shawmut, Langdale, Fairfax, and River View, Alabama.

This study has been completed and a report submitted to us outlining their recommendations, which generally consist of building two treatment plants which would be equivalent to secondary treatment. One plant would be located near River View, Alabama, and would serve the mills and villages of Shawmut, Langdale, Fairfax, and River View. The other plant would be located at Lanett, Alabama, and would serve Lanett Mill and Lanett Bleachery & Dye Works. It also appears that this plant in the north end of the Valley could very easily also accommodate the cities of West Point, Georgia, and Lanett, Alabama.

We have asked Chas. T. Main, Inc., to go ahead with the engineering design and plans for the plant in the south end of the Valley. They expect this work to be completed this fall, and it is expected that the plant itself will be completed sometime in the fall of 1967.

West Point-Pepperell, Inc., has approached the cities of West Point, Georgia, and Lanett, Alabama, asking them if they would like to cooperate with West Point-Pepperell in the use of the treatment plant for the north end of the Valley. We believe this idea of working with these two cities is a good one and should result in economies for all parties concerned perhaps; but with three parties involved, it understandably may cause delays or take more time in developing the final plant and getting it into operation.

Last week the Board of Aldermen for the city of West Point voted to cooperate with West Point-Pepperell in the use of the northern Valley plant and also voted to authorize Wiedeman and Singleton Engineers of Atlanta, Georgia, to design a collecting and pumping system which would deliver the waste to such a plant. We understand that this study would also involve the separation of domestic sewage from storm sewage in certain areas of West Point.

We would expect to askthe the Chas. T. Main Company to proceed with the engineering design for the plant for the north end of the Valley by the time they have completed the design of the plant for the south end of the Valley. This should be sometime this fall, and the design should be complete by spring of 1967. If there are no unforeseen delays, then the plant for the north end of the Valley could be put into operation by the spring or summer of 1968.

The above schedule and discussion will give you an idea as to what to anticipate at present, but some of these estimates are understandably a little uncertain. However, we feel we have developed a good plan for waste treatment; and we would like to take this opportunity to thank the members of the Alabama Water Improvement Commission and the Georgia Water Quality Control Board for their splendid cooperation in helping us analyze these problems and develop means of solving them.

Very truly yours,

"Herman Granberry" (Sgd)

HG/ba

cc: Mr. J. L. Ledbetter
Mayor John Barrow
Mr. J. L. Lanier, Jr.

- - -

West Point, Ga. - Lanett, Ala. Tuesday, June 14, 1966 CENTRAL PRESS

WP Council Accepts Proposal For 'Co-op' Treatment Plant

Unit to Serve Upper Valley's Two-City Area

The West Point Mayor and Board of Aldermen Monday accepted a proposal presented by West Point-Pepperell concerning the construction of a sewerage treatment plant to serve the cities of West Point and Lanett and the West Point-Pepperell plants in Lanett.

Alderman John Henderson presented the proposal to the council, asking that the city agree to a proposal that West Point-Pepperell build a treatment plant for Lanett plants and to serve the municipalities of Lanett and West Point.

* * *

THE GEORGIA Water Quality Control Board has for some time been seeking an answer from the City of West Point regarding the dumping of raw sewerage into the Chattahoochee River, Henderson said. The City of Lanett and West Point-Pepperell have been contacted to determine their action on this matter and also with the thought that considerable savings can be experienced by working jointly.

A tentative study was already underway by the Charles T. Main Company for West Point-Pepperell when it was agreed to extend these studies to include the cities of Lanett and West Point.

West Point-Pepperell, on May 31, announced that they would begin work on a sewerage disposal plant in the lower end of The Valley. At the time of this announcement, J.L. Lanier Jr., West Point-Pepperell vice-president, said that the northern treatment plant had been recommended by the Main engineers. Lanier said at that time the capacity of the northern installation would be about one and one-half times the size of the southern unit.

* * *

THE TENTATIVE findings of the engineers indicate that a treatment plant for the City of West Point could possibly cost $200,000 to $350,000, depending on the type of plant constructed. Also to be included is the yearly operating cost of the plant and the separation of the sewerage and storm pipes.

According to the tentative engineering surveys, one plant can be built to take care of both the cities and the textile plant. Also, the yearly operating cost will be no more for all three units than a unit would be for the city of West Point alone.

West Point-Pepperell proposes to build the plant and operate it on a basis of a cost per thousand gallons to be determined by the amount invested over a certain number of years of life expectancy and the yearly operating cost divided by the total number of gallons treated yearly by all three units.

* * *

THE CITY of West Point is expected to provide the facilities delivering the City's sewerage to the treatment plant and involves pipe lines plus a pumping station to handle the east side of the river. In addition, the city will be faced with the problem of the separation of storm and sanitary sewers on the west side of the river.

Alderman Henderson moved that the proposal be adopted inasmuch as the city would save the initial cost of building the plant and the yearly operating cost would be lower on the cooperative treatment plant than if the city built the plant.

Henderson also moved that the city request its own engineers to proceed with studies leading toward delivering the City's sewerage to the proposed treatment plant and for the separation of storm and sanitary sewer lines on the west side of the river.

RECEIVED
JUN 20 1966
GEORGIA
WATER QUALITY
CONTROL

CITY OF
WEST POINT, GEORGIA
Water Works, Electric Lights and Sewerage
West Point, Georgia

July 9, 1966

Mr. J. L. Ledbetter
Georgia Water Quality Control Board
47 Trinity Avenue, S.W.
Atlanta, Georgia

Dear Sir:

In line with our phone conversation of July 8, 1966 I wish to advise you that the West Point City Council passed the following resolution at their regular meeting on June 13, 1966.

> "Motion by Henderson, seconded by Strother that the City accept the proposal made to the City of West Point by West Point-Pepperell, Inc. to handle sewerage disposal for the City of West Point, Georgia. Carried."
>
> "Motion by Henderson, seconded by Moss that the city request our engineers to proceed with studies leading toward delivery of city sewerage to the proposed treatment plant and for the separation of storm and sanitary sewer lines on the West side of the river. Carried."

Our engineers, Wiedeman and Singleton of

Atlanta have been instructed to proceed with a study of this situation.

We do fear that the cost will be prohibitive and we will need all the state and Federal help available if we are to carry this project through. Any assistance you can give us will be greatly appreciated.

Very truly yours,
CITY OF WEST POINT

"John C. Barrow" (Sgd)
Mayor

cc: Mr. John W. Henderson
Mr. Herman Granberry

JCB/mjo

- - -

CHAIRMAN STEIN: Are there any comments or questions?

MR. ROGERS: I have one.

On page 18 you speak, Rock, of rules and regulations of the Board prohibiting installation of combined sewers. One of the problems I think we realize here is the existing combined sewers which will continue to be a problem. How can you abate pollution from those?

MR. HOWARD: We feel that, as I expressed to you I think the other day, we have got enough problems now to take care of the sanitary sewers that are discharging inadequately treated waste and untreated sewage to the river, and we are not in a position to -- and neither is the Federal Government -- get into separation of combined sewers.

I think it is something we have to face up to, but I think what we really are doing is getting the basic job done first.

MR. ROGERS: In the case of Atlanta, does this mean we would still have some of this combined sewage bypassing the plant without any treatment?

MR. HOWARD: We would probably have to require some treatment of bypassed sewage. Maybe eventually, if we have our water resources development, we are probably going to have to have some way of handling storm drainage.

But at this time I think we are going to have to stick to the subject of this Conference, to getting reasonable treatment, the best kind of practical treatment we can give, and clear up the existing interstate pollution.

As a matter of fact, I think you would have a hard time proving interstate pollution from Atlanta metropolitan area if we have all these facilities that we speak of here under secondary treatment with chlorination.

MR. ROGERS: Does this mean all of the combined sewage would go through these new facilities?

MR. HOWARD: No, I don't think so. Neither do you?

MR. ROGERS: No, I wouldn't think so.

MR. HOWARD: No.

MR. ROGERS: What type of treatment would you propose then for this bypass sewage?

MR. HOWARD: Well, some form of chlorination. I think there is going to have to be some careful study made to see what we can do in that field.

CHAIRMAN STEIN: Mr. Rademacher.

MR. RADEMACHER: I'd like to pursue that particular point, Mr. Howard. You feel that chlorination for raw discharge would have any material effect upon reducing pollutional effects?

MR. HOWARD: From the bacterial standpoint perhaps.

MR. RADEMACHER: It would be limited though?

MR. HOWARD: I am not saying it is practical now. I don't think anybody knows that answer.

MR. RADEMACHER: Could I ask this question just for my edification: When are your heavy rain months in this area?

MR. HOWARD: Usually in the winter and spring.

MR. RADEMACHER: I understood that July and August had quite a few rains?

MR. HOWARD: No. Those are our dry months.

MR. RADEMACHER: But how much would you expect to have overflow from these sewers during a year?

MR. HOWARD: What's that?

CHAIRMAN STEIN: Would you repeat the question?

MR. RADEMACHER: How much would you expect to have stormwater overflow going into the river during the year even after the treatment plants were completed?

MR. HOWARD: We'd have to have real hard rain. I don't know about numbers.

MR. RADEMACHER: Would there be any improvement over the report? It stated in the report something like 2,400 hours a year.

MR. HOWARD: When we get this program completed?

MR. RADEMACHER: Yes.

MR. HOWARD: Yes, I think so. As a matter of fact, flows bypassing the treatment plants after their completion should be disinfected.

CHAIRMAN STEIN: I don't want to act too much like an engineer here. But if you get overflows 2,400 hours a year, there must be some dry weather overflows. It doesn't rain that much down here, does it?

MR. HOWARD: We get about 50 or some-odd inches.

CHAIRMAN STEIN: Even so, that is quite a lot.

MR. HOWARD: We get quite a lot. That is why they built the reservoir.

CHAIRMAN STEIN: Do you have any dry weather overflow with this? Is that included in the report? How does that work? Is it just overflow in the rains? Or do you get dry weather overflows?

MR. WEST: As I understand it, it is when it rains. These figures were obtained from the City of Atlanta, Georgia on the amount of overflow.

CHAIRMAN STEIN: 2,400 hours?

MR. WEST: Yes sir.

MR. ROGERS: Just a minute. We need to clarify this point. Because of overloaded facilities now, it bypasses much more than that on the Clayton Plant. Is this not true? About a third of the time? Maybe Mr. Morris can clarify it.

MR. HOWARD: Mr. Morris.

MR. ROBERT H. MORRIS: I really don't know where to start.

MR. HOWARD: Mr. Morris is going to make a statement later on.

MR. MORRIS: Basically, the 2,400-hour figure you have represents the times at which the Clayton Plant was bypassed over an average of several years due to both combined sewer overflows and industrial waste problems associated with the combined system.

CHAIRMAN STEIN: I thought so. I didn't think it could rain that much.

MR. MORRIS: Mr. Howard's statement is perfectly valid. Let's get the sanitary sewage out of the combined sewers and out of the dry weather overflow conditions and treat it, and then let's worry about treating the stormwater overflows, please. That's a big enough problem.

CHAIRMAN STEIN: We can agree with that. But I do think to attribute 2,400 hours to rain alone would give Atlanta an awful lot of rain.

Are there any other questions or analyses?

(No response.)

You know, Rock, if you hadn't recommended -- and I understand why you did -- that this conference be adjourned sine die, I may not have said this. But I know you got this report less than a week in advance. We always try to get it out a month in advance.

But there is a wonderful double standard involving the States and the Federal government. They have a righteous complaint -- they only got their reports a week in advance. But do you know when we saw the State reports? This morning.

MR. HOWARD: Let me reply to that. Mr. Rogers and his staff have been kept informed of our program practically step by step.

On October 21, 1965 I wrote a letter to Mr. West, to which I have never had a reply, offering to give information, and I did give an outline of some of our work.

I have requested several times through Mr. Rogers that we be provided with a draft or the data from the report, and we never received any reply to that.

So there is no use getting into that now, because we are trying to get a problem settled. But that happens here.

CHAIRMAN STEIN: Yes. Well, that is why, Rock, I really wasn't excited when we got this this morning, because when I read your report and Alabama's report, I didn't find any surprises in them. I would be willing to bet when you read our report a week ago you didn't find any surprises in that either.

MR. HOWARD: No, except the Salmonella.

CHAIRMAN STEIN: I was surprised too. (Laughter) We just developed that technique.

As I understand it, Mr. Howard has some people from Georgia to call on. But I suggest, in order to be refreshed before we do that, we take a slight recess and then we hear the people from Georgia.

Don't go away because this is the point at which these conferences usually get interesting.

We will be recessed for ten minutes.

(Whereupon, a recess was taken.)

CHAIRMAN STEIN: May we reconvene?

Mr. Howard, I understand Mr. Rademacher has one more question before we start.

MR. RADEMACHER: Yes. Just on this point that you raised, that sampling is not significant when you get Salmonella with respect to water quality control, I think that there is a point that should be made. We are getting a lot more sophisticated in our measurement devices. Particularly with the water quality standards coming up with the ultimate bit of going into court, we are going to have to be very, very sure of the information that we collect in the field.

Certainly the MPN per se has many, many limitations, and anything that has been developed, such as the Salmonella test, will be very valuable in supporting data from field surveys and establishing pollution.

I would like to make that point clear and that certainly the Federal Water Pollution Control Administration is going to get much more detailed and not more general with respect to these survey techniques.

MR. HOWARD: Of course, our point is, it will be a number of years yet before States will be able to carry out sophisticated tests like the one you talk about.

Most of them haven't gotten around to running fecal coliform yet.

But my point in bringing that up was that in operating a water plant you don't have to worry about Salmonella particularly. You have to worry about typhoid and viruses and everything else. And you are going to have to have your plant operate to the extent you can give protection to your people -- whether you have got intestinal Salmonella, coliform, or so on -- as long as you know there is sewage going in there treated or untreated.

Mr. Chairman, I would like to recognize one of our Board members here, Mr. Ted Forbes. Would you please stand up? He is attending the Conference today.

MR. TED FORBES: Thank you.

CHAIRMAN STEIN: Mr. Howard, would you call your participants now, please?

MR. HOWARD: Yes. I would like to call Mr. Bob Morriss, speaking for Mayor Allen of Atlanta at this point.

STATEMENT OF

ROBERT H. MORRISS, ASSISTANT CHIEF
OF CONSTRUCTION, DEPARTMENT OF CONSTRUCTION, CITY OF ATLANTA,

ON BEHALF OF

HONORABLE IVAN ALLEN, JR., MAYOR,
CITY OF ATLANTA.

MR. MORRISS: Mr. Chairman, I have been asked by Mayor Allen, who regrets his inability to attend the meeting, to represent him. He felt too that it was rather short notice, as Rock has pointed out. We got the report three days after Rock did. This helped!

This is the statement that the Mayor has prepared. I would like to deliver it. I notice, before I start, incidentally, that it is already reported in the paper. Maybe I should just give you the paper, Mr. Chairman. (Laughter)

CHAIRMAN STEIN: How about your attachment?

MR. MORRISS: I will refer to that.

CHAIRMAN STEIN: Do you want that to appear in the record?

MR. MORRISS: It is submitted, sir, as a supplement to the statement.

CHAIRMAN STEIN: Do you want it included?

MR. MORRISS: I would like to enter it in the record.

CHAIRMAN STEIN: All right. Without objection, that will appear as if read, with one caveat.

MR. MORRISS: You certainly don't want me to read it.

CHAIRMAN STEIN: No, but our reproductions will be in black and white.

Off the record.

(Discussion off the record.)

MR. MORRISS: Mr. Chairman, ladies and gentlemen, it is a pleasure to welcome you to our city. It is something less than a pleasure, but quite necessary, to appear here to discuss the quality of our Chattahoochee River, which we all know is grossly polluted.

Officials of the City of Atlanta have studied the "Report on Pollution of the Chattahoochee River" prepared by staff members of the Department of Health, Education and Welfare and take very few exceptions to its contents.

The recommendations contained on pages 32 and 33 of this report are quite in keeping with present policies and immediate plans of the City of Atlanta in that:

1. The City of Atlanta and her metropolitan partners in the metropolitan sewer system are presently pursuing a $41 million scheduled program of pollution

abatement on the Chattahoochee River approved by the Georgia Water Quality Control Board. This program is reflected in the "Report on Water Pollution Control for the Chattahoochee River," which has been submitted as a supplement to this statement and accepted by the panel.

2. The Atlanta program provides for near future provision of secondary treatment with effluent chlorination at all water pollution control facilities. The operation of existing and future waste treatment facilities is and will continue to be superior in nature. Fecal coliform bacteria analyses will be added to normal control testing procedure.

3. It is standing policy to encourage and accept industrial discharges into the sewers and treatment facilities of the Atlanta metropolitan sewer system. This policy will continue.

4. No new combined sewers are being constructed in the Atlanta metropolitan system and the first project accomplishing physical separation of sewers is under way at present. Current plans call for an acceleration of this $20C million program for which there is at present no Federal aid.

To these recommendations I would add two others for your consideration:

1. Your report points out the thermal load

applied to the Chattahoochee River, but makes no specific recommendation concerning its control or reduction. This problem should receive the same consideration given to other pollutants.

2. Ultimately all programs aimed at the abatement of pollution on the Chattahoochee River, or on any other stream, are at the mercy of financial capability. To this point the State of Georgia has taken no step to assist her municipalities. Herein lies the major problem that we face in providing a satisfactory stream. My recommendation is that the State government accept this responsibility and provide the necessary assistance to local government and industry that would make this meeting totally unnecessary.

At the same time I fully realize that the City of Atlanta and the other local governments in the Atlanta area which are contributing to the pollution of the Chattahoochee must shoulder their fair share of corrective measures.

Atlanta will do just that.

Earlier this year I proposed a sewer service charge, amounting to approximately 50 per cent of water bills, for the City of Atlanta to provide a large portion of the city's share of pollution abatement costs.

This sewer service charge will enable the issuance of joint water and sewer revenue bonds to begin a planned program of sanitary sewers and water pollution control capital improvements and continuation of the water system programs already under way.

I am recommending to Public Works Committee No. 2 of the Board of Aldermen that a sewer service charge be immediately adopted and implemented and that the necessary steps be taken to insure Atlanta's capability to move forcefully, positively and swiftly to do our part to clean up the Chattahoochee.

We commend the Department of the Interior for its diligence and concern and welcome the continued co-operation of this Department and the other Federal agencies in combatting the pollution problem.

We request and urge the State government to join in this cooperative effort as a full and responsible partner.

The City of Atlanta has historically managed to meet its obligations to its people and its neighbors, and in the matter at hand, given adequate time and assistance, we will return the Chattahoochee to a condition that suits its setting. No more could be desired.

Thank you, gentlemen.

(Attachment to the statement, above referred to, follows:)

REPORT ON
WATER POLLUTION CONTROL
FOR THE CHATTAHOOCHEE RIVER
BY THE ATLANTA METROPOLITAN SEWER SYSTEM

Wiedeman and Singleton

Engineers

Atlanta, Georgia

December 1965

- - -

WIEDEMAN AND SINGLETON

ENGINEERS

1789 Peachtree Road, N. E.
Atlanta, Georgia 30309

December 30, 1965

The Honorable Ivan Allen, Jr., Mayor
and the Board of Aldermen
City of Atlanta
Atlanta, Georgia

Gentlemen:

Pursuant to your instructions the undersigned engineers have completed engineering studies to determine the treatment capacity, the most feasible methods and the estimated cost of removing pollutional matter from waste water discharged by the Atlanta Metropolitan Sewer System to the Chattahoochee River.

The recommended facilities consist of enlargement and improvement of the existing R. M. Clayton, Utoy

Creek and Sandy Creek Water Pollution Control Plants to remove 85 per cent of the organic matter from 117 million gallons of wastes per day expected to be discharged to the Chattahoochee River by the year 1985, and with minor plant improvements to provide the same degree of treatment to 146 million gallons of waste per day in the year 2000. The strength of the wastes to be treated will be equivalent to those produced by a tributary population of 1,420,000 persons in 1985 and by 1,760,000 persons in the year 2000.

The quality of the water pollution control plant effluents discharged to the Chattahoochee will conform to requirements stipulated by the State of Georgia Water Quality Control Board that an 85 per cent degree of treatment will be necessary to produce relatively stable plant effluents, virtually eliminating harmful bacteria by chlorination and maintaining an ample dissolved oxygen content in the river water as it passes the treatment plants.

This required degree of treatment can readily be met by the R. M. Clayton Plant dependent solely upon minimum average weekly releases of 1600 cubic feet per second from Buford Dam in accordance with the method of operation provided by the 80th Congress in 1947 when construction of the dam was authorized. As time goes on, however, it will be necessary to obtain increased minimum flow releases from Buford Dam or to provide complete reregulation of the river to obtain this minimum flow coincident with peak effluent discharges from Clayton Plant.

The same degree of treatment can also be met by the Utoy Creek and Sandy Creek Plants during minimum average weekly flows and present conditions of river temperature until about the year 1985. River temperatures are raised by steam-electric generating plants Atkinson and McDonough below Clayton Plant and again at the Yates steam-electric generating plant downstream to such an extent that the estimated oxygen content of the river water will be seriously depleted at minimum flow by the year 1985. Remedies may be found either by curtailing steam plant operations during minimum river flow, by increased river flow through changes in regulation, or by discovery and employment of new methods of waste treatment to obtain higher removals of organics. Such remedies will be made necessary by artificial creation of high river temperatures, or by what is termed "thermal" pollution by the power plants, and are not the responsibility of the Atlanta Metropolitan Sewer System.

Maintenance of the desired river water quality also depends upon the right of the Atlanta metropolitan area to use of the free flowing river for assimilation of its wastes after giving them the highest practical degree of treatment. Downstream impoundments proposed for the Chattahoochee near Atlanta will destroy the self-purification power of the river to such an extent that water quality in the nearest downstream reservoir will not be safe for unlimited recreational or water supply use. Here again the responsibility does not rest with the Atlanta Metropolitan Sewer System, but any remedies adopted should be chargeable to the cost of constructing the impoundments.

The secondary treatment proposed for each of the three water pollution control plants is a high rate form of the activated sludge process known as the nitrified sludge interchange or Kraus process. This is the most effective method of treatment which can be adapted to conditions of intermittent plant operation as dictated by a combined storm and sanitary sewer system. Solid matters removed from the wastes at Clayton Plant will be burned in a special type of sludge incinerator, this method also being selected from several alternatives as the most practical as well as economical procedure in current-day use. Sludge produced at the two smaller plants, Utoy Creek and Sandy Creek, will be disposed of by hauling to land fill in accordance with usual practice.

The estimated total project costs, annual charges for debt service and for operation of the recommended improvements are as follows:

		Annual Charges		
Name of Plant	Project Cost	Debt Service	Operating Cost	Total Annual
R.M. Clayton	$32,800,000	$2,309,000	$1,021,000	$3,330,000
Utoy Creek	4,800,000	337,900	264,600	602,500
Sandy Creek	3,340,000	235,100	101,900	337,000
Grand Total	$40,940,000	$2,882,000	$1,387,500	$4,269,500

Project costs are based on current contract prices with a reasonable near term allowance for contingencies. No attempt has been made to predict cost changes which may occur over the construction period due to business cycle adjustments in either direction. Operating costs are those anticipated at full plant capacity.

The proposed construction schedule given on Plate 16 of the report was determined after numerous conferences with the City's Construction Department, officials of the Georgia branch of the Associated General Contractors, and several large contracting firms experienced in this type of construction. From this information it is believed that the R. M. Clayton Plant improvements can be completed during a five-year construction period, Sandy Creek Plant in a two-year period, and Utoy Creek in a three-year period, which is deferred until near the end of construction at Clayton Plant. The schedule will correspond closely with financing plans being considered by the principal governments who contribute to the cost of the improvements.

Considerable financial assistance is expected to be available to each participating government in the form of Federal grants through the Department of Health, Education and Welfare.

If the labor market becomes too highly competitive among contractors due to multiple city and county projects being rushed to completion, construction costs could easily soar to levels which would make financing difficult and possibly nullify the aid obtained through Federal grants.

Attention is directed to the index, explanation of terms, sixteen drawings or plates, and Appendices A, B and C which will be of assistance in reading the body of the report which follows.

The Engineers are most ready to assist in discussions and further planning attendant upon the initiation of formal action for the project.

Acknowledgment is made of valuable assistance and cooperation given by Messrs. Ray Nixon, M. B. Nixon, Robert H. Morriss, and others on the staff of the City's Construction Department in numerous consultations and in furnishing information for the preparation of this report.

Yours very truly,

WIEDEMAN AND SINGLETON

"C. E. Drummond, Jr." (Sgd)

CED-Jr:jw

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STATE WATER QUALITY CONTROL BOARD

47 Trinity Avenue, S.W.

Atlanta, Georgia 30334

March 1, 1966

Mr. C. E. Drummond, Jr., Partner
Wiedeman and Singleton, Engineers
1789 Peachtree Road, N. E.
Atlanta, Georgia

Re: Report on Water Pollution Control
For the Chattahoochee River by the
Atlanta Metropolitan Sewer System

Dear Mr. Drummond:

We concur in general with your excellent report on the water pollution abatement program for the Atlanta Metropolitan Sewer System. The following comments and suggestions are offered for your consideration.

Flows by-passing treatment plants (after their completion) should be disinfected; primary treatment plus disinfection would be preferable.

The requirement of eighty-five per cent secondary treatment with disinfection to follow is considered adequate for this program. The criterion of 4.0 milligrams per liter for dissolved oxygen is adequate. Reference is to our letters of August 6th, and December 13th, 1965, outlining treatment requirements.

It is requested that the construction scheduled be adjusted so that all effluents will receive secondary treatment by July 1, 1971. Should the Utoy Creek Plant not be completed by then, all flows from this facility should receive primary treatment plus disinfection.

We offer our compliments for the outstanding efforts you have demonstrated on this program. We hope the design and construction of the treatment plants can proceed with the celerity this important work deserves.

Sincerely,

"R. S. Howard, Jr." (Sgd)
Executive Secretary

RSH:JCM:rb
cc: Robert H. Morriss

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ABBREVIATIONS AND EXPLANATION OF TERMS

BOD - Biochemical oxygen demand: A measure of organic pollution in terms of the oxygen consumed in the decomposition of organic matter.

BTU - British thermal unit: A unit measure of energy.

CFS - Cubic feet per second, or second-feet: A measure of flow.

DO - Dissolved oxygen: The oxygen dissolved in water.

FPS - Feet per second: A measure of velocity.

HP - Horsepower.

kwh - Kilowatt hours: A unit measure of electrical energy.

MGD - Millions of gallons per day: A measure of flow.

ml - Milliliter: A measure of volume in the metric system, equivalent to 1 cubic centimeter, or 1-1000th of a liter.

PE - Population equivalent: The population associated with a given quantity of pollution, determined by using commonly accepted values for average waste load per capita in terms of BOD, suspended solids, or number of coliform bacteria.

PPM - Parts per million: A measure of concentration, applied herein to BOD, DO or SS.

SS - Suspended solids: Matter removable from a liquid by filtration as opposed to dissolved solids which are not filterable.

USGS - United States Geological Survey (Department of the Interior).

USPHS - United States Public Health Service (Department of Health, Education and Welfare).

Sewage - Waste matter which passes through sewers.

Sewerage - A system of sewers.

Coliform - Bacteria found in waste water, usually of human origin, whose presence is an indicator of potential health hazard from pathogenic organisms.

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SCOPE

The studies outlined in this report were made to determine the most feasible methods, the treatment capacity and most economical cost of providing adequate removal of pollutional matters from waste water discharged by the Atlanta Metropolitan Sewer System to the Chattahoochee River. The major portion of this waste originates in the Nancy Creek and Peachtree Creek watersheds and is delivered to the R.M. Clayton Water Pollution Control Plant through that part of the sewer system which serves a large part of the City of Atlanta, part of DeKalb County outside of Atlanta city limits, and part of unincorporated Fulton County. Smaller portions of waste originate in the Proctor Creek watershed, now tributary to Clayton Plant, and in the Sandy Creek and Utoy Creek watersheds, each of the two latter watersheds being tributary to a treatment plant serving its area. The Clayton, Sandy Creek and Utoy Creek plants are known as primary treatment type, designed to remove one-half to two-thirds of the suspended solids present in raw wastes and to reduce by approximately one-third the demand for oxygen (biochemical oxygen demand) required by decomposition of organic matter.

These studies give principal consideration to the following:

1. Existing conditions and trends of increase

in population, waste water flow and strength.

2. Review of pollutional loads on the Chattahoochee River and permissible future loads.
3. Degree of treatment required for pollution control plants to meet permissible pollutional loadings.
4. Determinations of required plant capacities.
5. Description of existing plants and construction proposed for near term and future needs.
6. Details of construction program and estimated costs.
7. Recommendations as to the necessary construction and scheduling the different phases to meet immediate needs and minimize nuisance during the improvement program.

AREA SERVED BY THE CLAYTON PLANT

The R.M. Clayton Water Pollution Control Plant serves approximately 445,000 of the 913,000 residents of DeKalb and Fulton counties. Sewage flow to the plant, which was designed for primary treatment of 42 million gallons of sewage per day, averaged 63 million gallons per day last year, more than the total for all of the other treatment plants in the five-county area combined. Because of the present overload, some of the sewage is bypassed to the river without treatment.

Of the 158 square miles tributary to the Clayton Plant, approximately 76 square miles are in Fulton County and 79 square miles are in DeKalb County. Three square miles of unsewered area are in Gwinnett County. Approximately 59 square miles of the area in Fulton County and 2 square miles of the area in DeKalb County are within the city limits of Atlanta. Plate 1, Map Showing Water Pollution Control Plant Drainage Areas, shows the areas served by the Clayton Plant. Areas served by other plants are shown on Plate 2, Map Showing Water Pollution Control Plants Tributary to the Chattahoochee River.

POPULATION TRIBUTARY TO THE CLAYTON PLANT

The past and estimated present and future populations tributary to the Clayton Plant are as follows:

Year	Population
1950	320,000
1960	404,000
1965	445,000
1985	619,000
2000	686,000

The above population estimates agree with current studies by the Atlanta Regional Metropolitan Planning Commission. The estimates are extended to the year 2000 to determine the long-range requirements for the plant. Detailed estimates of the future populations within Cobb, DeKalb and Fulton Counties are given by drainage areas in Appendix "A."

WASTE WATER FLOWS AT THE CLAYTON PLANT

Records show the average waste water flows at the Clayton Plant, and the corresponding waste flows per capita within the Clayton Plant drainage area to have been as follows:

Year	Average Waste Flows at Clayton Plant, Million Gallons per Day	Estimated Population in Drainage Area	Waste Flows, Gallons per Capita per Day	
1950	36	320,000	113	
1960	51	404,000	128	Last
1961	50	409,500	122	5-year
1962	54	419,000	129	average:
1963	57	428,500	133	131
1964	63	438,000	144	

Because of the overload at the Clayton Plant it has been necessary to bypass part of the flow in recent years. The waste flows shown in the above table are of very limited accuracy, representing a combination of the measured flows through the plant and estimates of the quantity of flow bypassed. Flows are also influenced by weather, as the amount of infiltration and storm water will be greater in wet years than in dry years. No significance is given, therefore, to the apparent increase in per capita flows in 1963 and 1964.

The average per capita flow during the last five years, 131 gallons per capita per day, will be taken as representing the present per capita waste flow. (See map of plant area, Plate 4.)

In order to estimate future per capita flows, water use records of the Atlanta area have been examined. The per capita water consumption in the area served by the Atlanta Water Works increased from approximately 100 gallons per capita per day in 1934 to approximately 132 gallons per capita per day in 1964, or roughly ten per cent each decade. Assuming this same rate of increase for waste flows at the Clayton Plant, the 1985 flow is estimated to be 158 gallons per capita per day.

The 1985 population tributary to the Clayton Plant has been estimated at 619,000. The estimated average weekly flow, assuming a per capita flow of 158 gallons per day, is therefore equivalent to 98 million gallons per day.

Generally, waste flows during weekdays (Monday through Friday) are about 105 per cent of the average weekly flows. The estimated average weekday flow in 1985 is therefore 103 million gallons per day.

These estimates of increased waste flow were checked with estimates of water consumption made by the Atlanta Water Works, that average daily water consumption would be 107 million gallons per day for 1980 and 127 million gallons per day in 1990. If the mean rate of increase in estimated water consumption for future years is applied to present waste flows, the average 1985 flow would be 96 million gallons per day.

Assuming a continued increase in the per capita water consumption, the average waste inflow at the Clayton Plant in the year 2000 should be 120 million gallons per day.

Some of the sewers tributary to the Clayton Plant are combined sanitary and storm sewers. This undesirable situation, which will require an expensive program for correction, results in excessive quantities of waste flow during periods of rainfall. As it is not practical to design a plant to treat the combined storm water and sanitary sewage wastes, it will be necessary to continue the practice of bypassing a part of the flow during periods of heavy rainfall until sanitary and storm flows have been separated.

Peak flows are normally about 1.3 times the average daily flows and maximum flows, exclusive of storm water, are estimated to be 1.5 times the average daily flows. The maximum flow for hydraulic design purposes is therefore expected to be approximately 150 MGD in 1985.

Summarizing, the waste water flows to be used for plant design purposes are as follows:

ESTIMATED WASTE WATER FLOWS IN MGD

Year	Weekly Average	Weekday Average	Week End Average	Maximum
1964	63			90
1985	98	103	88	150
2000	114	120	102	180

Nominal plant capacity for 1985 conditions should be ample for treating approximately 100 MGD of waste water. Because of site limitations, it will be advantageous for ultimate economy to design major structures to treat 120 MGD. An explanation for this will be found in later paragraphs of this report.

WASTE WATER STRENGTH AT THE CLAYTON PLANT

The strength of waste water is normally measured on the basis of the relative weight of decomposable organic matter, expressed in terms of biochemical oxygen demand, or BOD, and in terms of the relative weight of suspended solids in the sewage. The Average BOD and suspended solids (SS) of the sewage waste at the Clayton Plant are shown below in terms of parts per million.

Year	Biochemical Oxygen Demand	Suspended Solids
	PPM	PPM
1958	238	255
1959	239	255
1960	246	248
1961	256	253
1962	256	259
1963	232	238
1964	244	200
7-year average	244	244

The values of BOD and suspended solids shown above exhibit no trend with regard to waste water strength. The seven-year average for BOD and suspended solids was 244 parts per million. For the purpose of this report a value of 250 parts per million will be assumed for both BOD and suspended solids. This waste water strength may be expressed in terms of population equivalents (PE). For 100 MGD flow of waste water expected in 1985 the organic load in terms of BOD and suspended solids will have a population equivalent of 1,250,000 persons. In the year 2000 the estimated flow of 120 MGD will have an organic strength equivalent to 1,500,000 persons. These values will be used for determining the capacities of major structures, as described more fully in later paragraphs of this report.

AREAS SERVED BY SANDY CREEK AND UTOY CREEK PLANTS AND BY PROCTOR CREEK SEWER

Other areas within Atlanta tributary to the Chattahoochee River considered within this study are those tributary to the Sandy Creek Plant, which serves approximately five square miles of Atlanta, the Utoy Creek Plant, which serves approximately 32 square miles including portions of East Point, Atlanta, and unincorporated Fulton County. This third area is now served by Proctor Creek sewer which delivers its wastes to the Clayton Plant. The areas served by the Proctor Creek sewer and the Utoy Creek and Sandy Creek plants are shown on Plate 1, Map Showing Water Pollution Control Plant Drainage Areas.

POPULATION TRIBUTARY TO PROCTOR CREEK, SANDY CREEK AND UTOY CREEK DRAINAGE AREAS

The past and estimated present and future populations within the Proctor Creek, Sandy Creek and Utoy Creek drainage areas are as follows:

	Population			
Drainage Area	1950	1965	1985	2000
Proctor Creek	92,000	108,500	110,000	110,000
Sandy Creek	2,500	11,000	20,000	25,000
Utoy Creek	37,000	67,650	105,800	123,000

The upper portion of the Proctor Creek drainage area is densely populated and has been losing population in recent years, while the less developed lower portion of the drainage area has been increasing in population. The populations within the sub-areas of Proctor Creek served by the pumping stations are of little significance inasmuch as the waste flows from these areas are expected to be contributed primarily from industrial developments.

The population growth of the Sandy Creek and Utoy Creek drainage areas has been rapid in recent years. Development of these areas is expected to be substantially complete by 1985.

WASTE WATER FLOWS AND STRENGTH FROM PROCTOR CREEK, SANDY CREEK AND UTOY CREEK DRAINAGE AREAS

The estimated present and future waste flows in MGD from Proctor Creek, Sandy Creek and Utoy Creek drainage areas are as follows:

Drainage Area	1965	1985	2000
Proctor Creek	12	15	17
Sandy Creek	1.1	2.5	5.0
Utoy Creek	8	12	16

The estimated waste flow pumped to Proctor Creek sewer from the Bolton Road and Hollywood Road Sewage Pumping Stations is expected to total 5 MGD by 1985 and nearly 7 MGD by the year 2000.

Wastes tributary to the two pumping stations in the Proctor Creek area consist of sanitary sewage only, whereas much of the waste originating in the upper Proctor Creek drainage area is composed of combined storm and sanitary sewage.

The influent to the Sandy Creek and Utoy Creek Plants is weaker than normal domestic wastes, having a BOD and suspended solids content of approximately 150 parts per million as compared to 244 parts per million BOD and suspended solids found for wastes tributary to Clayton Plant. The weak strength of the wastes is attributed to ground water infiltration and to weak commercial and industrial wastes discharged to the sewers.

The percentage of the hydraulic load to the Sandy and Utoy Creek Plants attributable to ground water infiltration will probably decrease as the areas develop, resulting in an increase in strength of the wastes. In order to allow for such an increase in strength and for some degree of industrial development in these areas, a future BOD and suspended solids concentration of the wastes tributary to the Sandy Creek and Utoy Creek Plants of 200 parts per million will be assumed. For general estimating purposes, the wastes from the Proctor Creek area will be assumed to be of the same strength. In each case the waste water strength in terms of population equivalents will be the same as the estimated population.

TREATMENT OF PROCTOR CREEK AND SANDY CREEK WASTES

Site limitations at the Clayton Plant will not permit its expansion beyond a daily treatment capacity of 120 MGD expected to be reached by the year 2000. As explained later in this report it may be necessary at that time to divert all the waste flowing to the Clayton Plant through Proctor Creek sewer to a combined plant for Sandy Creek and Proctor Creek areas.

The most logical plan for diversion of these wastes is that of gradual expansion of a plant to treat wastes from both the Sandy Creek and Proctor Creek watersheds.

The estimated average combined waste flow from the Sandy Creek and Proctor Creek areas in the year 2000 is 22 million gallons per day. The best site for a plant of such a capacity on the available land adjacent to Fulton County Airport is the land next to the Chattahoochee River, as shown on Plate 3. Much of the land is subject to flooding and a dike to elevation 770 would be required.

While complete diversion of the Proctor Creek wastes to the site of the Sandy Creek Plant will not be required until approximately the year 2000, the extreme difficulty of obtaining suitable sites for water pollution control plants makes it advisable to reserve the available land at the Fulton County Airport for a plant to serve the Sandy and Proctor Creek areas.

The Bolton Road Sewage Pumping Station which delivers waste to the Proctor Creek sewer is in need of immediate additional capacity. Under proposed improvements for the Sandy Creek Plant it is planned to divert the waste collected at the Bolton Road Pumping Station through a new force main and trunk sewer to a new Sandy Creek Plant at Fulton County Airport as shown on Plate 14. The existing primary treatment plant of 1 MGD capacity is too small to be useful in the proposed expansion and would be abandoned.

Flows anticipated by 1985 would include 2.5 MGD from the Sandy Creek area, 2.0 MGD from Bolton Road Pumping Station and 0.5 MGD additional flow collected by the new trunk sewer, or a total of 5 MGD waste flow from 50,000 tributary population equivalent.

At some future date the Hollywood Road Pumping Station would also divert its flow to the combined Sandy Creek -- Proctor Creek Plant for treatment of an average 10 MGD waste flow.

Details of the required facilities are given later in this report.

TREATMENT OF UTOY CREEK WASTES

In order to provide for the anticipated waste loads in 1985 it is recommended that the Utoy Creek Water Pollution Control Plant be designed to treat a flow of 12 MGD and a population equivalent of 120,000, and that this plant be designed for expansion to a capacity of 16 MGD to serve a population equivalent of 160,000. The required facilities are described in detail later in this report.

STREAM USE

It is certainly preferable that the waters of a free-flowing stream be kept in an unpolluted rather than in a polluted state. Except for isolated mountain regions, however, there are no longer pure streams of any consequence which are safe for human consumption or for unlimited recreational use without extensive treatment or the imposition of other limitations necessary to safeguard the public health. The heavy population of our larger cities tends to center around the larger streams, thus facilitating the disposal of liquid waste from both domestic and industrial sources.

The problem of stream use then becomes a matter of determining quality requirements for various uses, such as water supply, waste disposal, recreation, electric power or other industrial use or the assignment of certain stretches of the stream to one or more of these uses.

This is not a novel concept but one which is supported by years of cooperation among cities and industries alike under State or interstate control. The waters of major rivers are used repeatedly as sources of water supply, each instance being followed by the return of liquid waste after varying degrees of treatment whereby the benefits of dilution and stream reaeration will restore their quality for acceptable reuse for almost an unlimited number of cycles. Notable examples of this are the river basins of the Delaware, Potomac and Ohio Rivers and the multitude of rivers in New England, in each case of which control of water use and its pollution is under the authority of a sanitation or pollution control commission having members representing from four to eight States.*

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*Journal of Water Pollution Control Federation 1963, Vol.35, p. 139

WATER QUALITY REQUIRED FOR CHATTAHOOCHEE RIVER

It should be obvious that sections of the Chattahoochee River above established water supply intakes constructed by DeKalb County, Cobb County and the City of Atlanta should be protected from major pollution of a degree and quantity which would not exceed the capabilities of modern water treatment plants to render river water safe for human consumption. This does not mean eliminating the discharge of highly treated water pollution control plant effluents to the river for ultimate disposal, for even if well-treated effluents were eliminated entirely there would still be a major and perhaps equal source of pollution from surface runoff into the many smaller, tributary streams which drain heavily populated urban or suburban areas. It does mean that pollution control plants discharging effluents above these intakes should provide the highest degree of treatment, including chlorination, by means of careful plant design, construction, maintenance and operation to remove dangerous quantities of pollutional matters as well as harmful or pathogenic bacteria.

Immediately downstream from Atlanta Water Works intake the Chattahoochee River receives the major portion of waste water collected by the Atlanta Metropolitan Sewer System and given primary treatment, or removal of solids by settling, by the R. M. Clayton Water Pollution Control

Plant. Approximately 70 per cent of the tributary wastes pass through this plant, the remaining 30 per cent being bypassed to the river without treatment. The organic matter in the treated and bypassed waste consumes dissolved oxygen in the river, frequently depleting the oxygen level to the extent that fish and other forms of desirable aquatic life are adversely affected. A large part of an estimated 75,000 pounds of suspended solids in the wastes discharged daily to the river settles to the bottom of the river below the Clayton Plant, resulting in a rapid depletion of the dissolved oxygen in the river in this area. Downstream from the Clayton Plant the river receives the treated wastes from four additional primary type plants, Sandy Creek, Utoy Creek, Camp Creek and Fulton County Industrial Plant. The concentration of coliform bacteria, which is the commonly accepted measure of bacterial quality and an indication of the potential presence of pathogenic organisms, is at its highest about ten to twenty miles below the Clayton Plant, whereafter the coliform concentration decreases rapidly. The oxygen level of the river frequently falls below the desired minimum level of 4 PPM in the warm summer months within 20 to 40 miles below the Clayton Plant, whereafter the rate of reaeration of the river exceeds the rate of deoxygenation and the condition of the river improves. There are no major users of the river for raw water supply until some 90 miles downstream at LaGrange where the river has recovered most of its normal oxygen content and the coliform count has receded to reasonably safe levels for reuse as a water supply source.

In order to prevent nuisance in this section of the river and to maintain a balanced fish population and normal aquatic life, a minimum dissolved oxygen level of four parts per million is considered desirable. To attain this objective, all water pollution control plants in the metropolitan area tributary to the Chattahoochee River downstream from water supply intakes should provide reliable secondary treatment, or the reduction of the remaining suspended and dissolved organic matter by one of the established biological processes, and chlorination as a safeguard against harmful bacteria.

This statement has been confirmed by the Georgia Water Quality Control Board which has ruled✝ that all wastes discharged to the Chattahoochee River from Clayton Plant and others downstream should receive 85 per cent secondary treatment, followed by chlorination, so that the river as it flows past the plant after receiving plant effluent will have an ample supply of dissolved oxygen, be free of noticeable pollution and objectionable odors, and will have limited coliform (bacterial) counts suitable for all

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✝See Plate 5, letter dated August 6, 1965, from State of Georgia Water Quality Control Board.

practical and reasonable uses of the stream. The degree of secondary treatment required at the Clayton Plant and other plants downstream to meet these criteria will depend on the organic loads tributary to these plants and on the river flows and temperature which may be expected. These are discussed in the next four sections.

DEGREE OF TREATMENT REQUIRED FOR POLLUTION CONTROL

The quantity of organic matter in wastes is commonly measured in terms of suspended solids (SS), or in terms of the biochemical oxygen demand (BOD), expressed either in parts per million or in terms of the equivalent number of persons contributing pollution to the wastes, usually referred to as population equivalents (PE). The organic loads tributary to the Clayton Plant and other plants south of the Atlanta Water Works intake have been projected to be the BOD equivalent of 1.7 million people in 1985, and to 2.25 million people by the year 2000. The estimated degree of treatment, in terms of percentage reduction of biochemical oxygen demand, which must be provided by plants below the Atlanta Water Works intake to maintain acceptable oxygen levels in the river, has been estimated for the years 1985 and 2000 for a range of river flows and temperatures based on the foregoing estimates of tributary organic loads and on the estimated permissible amount of pollution in the river. These estimates are shown in detail in Appendix "B" and repeated below in Table B-10.

TABLE B-10

ESTIMATED FUTURE BOD REMOVAL REQUIRED TO MAINTAIN MINIMUM OXYGEN LEVEL IN THE CHATTAHOOCHEE RIVER

River Flow, CFS	Temp: / Year:	20°C. 1985	20°C. 2000	25°C. 1985	25°C. 2000	30°C. 1985	30°C. 2000
700		76%	82%	87%	90%	95%	96%
1200		59%	69%	76%	82%	88%	91%
1500		49%	61%	70%	77%	85%	89%

The effect of river flows and temperatures on the degree of treatment required to maintain desirable oxygen levels in the river can readily be seen from the above figures. The quantity of river water available for dilution of wastes depends primarily on the release practices of Buford Dam, 48 miles upstream from the Clayton Plant, and upon operations of the reregulation reservoir at Morgan Falls Dam, 12 miles upstream from Clayton Plant. The river temperature is significantly increased by the operation of the Atkinson and McDonough steam generating plants downstream from the Clayton Plant. The effects of river regulation and thermal pollution from the generating plants on treatment requirements and river quality are discussed in the following sections.

FLOW RELEASES FROM BUFORD DAM

The minimum flow of water in the Chattahoochee for hourly, daily and weekly periods is of supreme importance in determining the allowable pollutional loads which can be delivered to the stream for its use as described above. This minimum flow which can be depended upon for dilution of treated wastes is governed by releases of water from Buford Dam, and reregulated flow from Morgan Falls Dam.

The method of operating Buford Dam as stated in House Document No. 300, 80th Congress, First Session, 1947, was to be such as to insure a minimum average weekly flow of 1634 second-feet (CFS) at the dam, equivalent to approximately 1700 second-feet at Atlanta. The document further stated: "In order to meet the estimated present needs of the City, and to prevent damage to fish, riparian owners, and other interests by complete shutdowns of the Buford plant during the daily and week-end off-peak periods, varying flows up to 600 second-feet should be released from Buford so as to insure at all times a flow at Atlanta not less than 650 second-feet."

Chart No. 2, dated January 1951, by the Corps of Engineers, showed an estimated typical flow pattern of the Chattahoochee River at Atlanta and confirms the average prime flow from Buford to be 1600 second-feet plus 100 second-feet inflow between Buford and Atlanta, or 1700 second-feet at Atlanta. This Chart No. 2 formed the basis for the contract between the City of Atlanta and Georgia Power Company dated September 6, 1957 for operating the Morgan Falls Power Plant and reregulation basin. The order issued on March 3, 1959, to Georgia Power Company in the Federal Power Commission License, Project No. 2237, states: "According to the Corps of Engineers, Buford will be operated as a peaking plant with releases greatly in excess of 600 CFS at all times. Under these conditions the storage space in the Morgan Falls reservoir within the 8-foot draw-down area will be utilized under the agreement with the City of Atlanta to reregulate the releases from Buford so as to provide a minimum flow of at least 750 CFS at all times at Atlanta and to provide flows in excess of 750 CFS in the Atlanta area in the daytime."

This understanding was stated in a letter dated February 18, 1957 from Mayor William B. Hartsfield to the District Engineer, Corps of Engineers, Mobile, Alabama. In a reply to this letter dated June 7, 1957, Lt. Col. R. O. Miller, Corps of Engineers, Mobile District, stated that the 1600 second-feet "is an average figure for flow expected during the dry season of the year and that it can and will vary through the operation of the Buford Plant to meet certain load requirements."

The history of actual releases from Buford

Reservoir shows that it has been and is now operated in such manner as to use as little draw-down and as little storage as possible. The storage and regulated flow provisions outlined in House Document No. 300, 80th Congress, 1st Session, provide for a 35 foot drawdown below the normal power pool level at Elevation 1070. The actual maximum draw-downs experienced since operations were commenced are shown in official U. S. Geological Survey publications from gage height records furnished by the Corps of Engineers, as follows:

Water Year Ending Sept. 30	Maximum Draw-down in Feet (To Nearest 1/10 Foot)	Date
1959	9.4 Ft.	Jan. 21, 1959
1960	6.0 Ft.	Sept. 25, 1960
1961	9.2 Ft.	Jan. 27, 28, 1961
1962	6.7 Ft.	Dec. 8, 1961
1963	10.5 Ft.	Nov. 23, 24, 1962
1964	5.2 Ft.	Nov. 28, 1963

For a ten-week period from November 25, 1962 through January 31, 1963, deficient releases from Buford Dam were of such magnitude that it was impossible for Georgia Power Company to release the minimum requirements contracted for with the City of Atlanta. From November 25, 1962 through Monday, December 10, 1962, the average power release from Buford Dam was 715 CFS and the main daily flow at Atlanta was 1164 CFS. For the two months of December 1962 and January 1963 the average release from Buford was 704 CFS and the average daily flow at Atlanta was 1328 CFS instead of the anticipated 1700 CFS at Atlanta. During this two-month period Buford stored the equivalent of 434 CFS in December and 1127 CFS in January. The reservoir level rose 2.8 feet during this period rather than use being made of draw-down to power pool levels established when the project was authorized by Congress. The actual draw-down was 10.5 feet below the normal power pool Elevation 1070 instead of a 35-foot draw-down as established in House Document No. 300 previously referred to.

There are many other instances of deficient releases over seven years of record. The table below lists the various months in which a mean flow of 1600 CFS or less was discharged from Buford Dam and the number of days in each month when releases were below the established minimum daily average.

FLOW RELEASES FROM BUFORD DAM OF LESS THAN 1600 CFS

Water Year Ended September 30	No. of Months in Year with Flow Releases Less Than Mean of 1600 CFS From Buford	No. of Days in Year with Flow Releases Less Than Mean of 1600 CFS From Buford	Per Cent of Time
1958	3	63	17
1959	6	146	40
1960	1	20	5
1961	1	24	7
1962	2	50	14
1963	7	174	48
1964	3	48	13
Total for 7 Years	23	525	21% Average

The above record is offered in order to bring out later in this report the dilution deficiency created in the flow of the Chattahoochee as it passes Clayton Water Pollution Control Plant if not operated as intended when the Buford Dam project was authorized by Congress.

FLOW PATTERN FROM REREGULATION AT MORGAN FALLS DAM

The facilities at Morgan Falls Dam do not reregulate the daily flows released from Buford Dam so that the peak river flows at the Clayton Plant coincide with the peak organic loads in the plant effluent, thereby providing relatively constant dilution to the wastes throughout teh day. Under the contract between the City of Atlanta and Georgia Power Company, a minimum release of 750 CFS is maintained at all times, with releases in excess of 750 CFS during the day in accordance with a pattern set forth in the contract. Average daily week-end flows can be increased during drought seasons to 1150 CFS on Saturdays, 1000 CFS on Sundays, and 1340 CFS on Mondays. The above minimum contract releases are dependent upon minimum releases of 600 CFS at all times from Buford Dam and upon average minimum weekly releases of 1600 CFS. This is made possible because of 3200 acre feet storage at Morgan Falls for reregulation. (See Plate A-1, Inflow-Discharge Hydrograph -- Morgan Falls Dam, in Appendix "A".)

The existing treatment facilities at the Clayton

Plant retain the wastes for approximately one and one-half hours before they are discharged to the river, with maximum waste discharges occurring during the afternoon when reregulated flows from Morgan Falls are at a maximum. The average detention time in the new proposed facilities will be approximately five to five and one-half hours. The time of discharge of the peak organic load will therefore be delayed up to four hours by the proposed treatment. The present pattern of releases from Morgan Falls Dam, as set forth in the contract between the Georgia Power Company and Atlanta, will therefore result in peak river flows passing the Clayton Plant before the discharge of the peak organic load in the treated wastes.

The contract between the Georgia Power Company and the City of Atlanta states that minor adjustments may be made in the pattern of releases from Morgan Falls Dam, but the extent of these adjustments has not been established. While it would be desirable to delay the peak releases from Morgan Falls to obtain optimum dilution of the Clayton Plant wastes, it does not appear possible under the contract to require such a major adjustment. Whether or not such releases are obtainable or other means possible to supplement daily and weekly average minimum flows, secondary treatment facilities are needed immediately for all pollution control plants now employing only primary treatment before discharging wastes to the river.

EFFECT OF TEMPERATURE AND THERMAL POLLUTION ON RIVER WATER QUALITY

The ability of a river to assimilate wastes is dependent to a great extent on the river temperature. As the river temperature increases, biological activity increases with the result that oxygen is more rapidly depleted from the water. Furthermore, the quantity of oxygen which will dissolve in water decreases with increasing temperature. It is estimated that the Chattahoochee River can assimilate over three times as much organic matter at 20°C. as it can at 30°C. without excessive depletion of oxygen in the water.

The Atkinson and McDonough steam-electric generating plants downstream from the Clayton Plant raise the temperature of the river by use of the river water for condenser cooling. This newly recognized hazard, known as thermal pollution, significantly decreases the ability of the river to assimilate organic wastes safely. When operating at full load, the generating plants will increase the maximum average daily river temperature from 20°C. to 34°C. at minimum river flow at 700 CFS at the Atlanta gage. At a 34°C. temperature, dissolved oxygen content cannot be maintained at the 4PPM which is desirable to prevent nuisance and maintain aquatic life. However, this high temperature is not expected to endure but for a few river miles as the water cools from radiation and inflow from downstream tributaries. For low flow periods of 1200-1300 CFS which will occur during drought seasons on Mondays for minimum average releases of 1600 CFS from Buford, the probable maximum temperatures below the steam plants will be 28°C., requiring 83 per cent treatment at Clayton Plant and all others immediately downstream in order to maintain 4 PPM of dissolved oxygen. After the population equivalent expected to be tributary to these treatment plants about the year 1985 has been reached, higher than 85 per cent degree of treatment will be needed, or additional river flow obtained by further reregulation, in order to maintain acceptable oxygen levels in the river. For Saturday and Sunday minimum flows of 1150 CFS and 1000 CFS respectively, the population equivalent measure of pollution will be somewhat less but not sufficient to diminish treatment requirements stated for the critical week-day occurring on Monday.

The temperature effect on treatment requirements is shown graphically on Plate 6, Treatment Requirements vs. River Discharge for Maximum River Temperature for the year 1985, and on Page 7 for the year 2000.

BACTERIAL QUALITY OF CHATTAHOOCHEE RIVER WATER

The common measure of the bacterial quality of water is the estimated number of coliform bacteria per 100 milliliter (ml) of water. The coliform organisms which are present in all domestic wastes, indicate the potential presence of pathogenic organisms.

The treatment of waste waters results in the reduction of the number of bacteria in the water approximately in proportion to the degree of treatment accomplished -- namely, up to 50 per cent reduction with primary treatment, and up to 85 to 95 per cent with a secondary oxidation process. Further reductions, as great as one thousand to one, can be accomplished by chlorination of the waste. After the waste is discharged to the receiving stream, the number of coliform organisms generally increases for a period of 10 to 15 hours, whereafter the organisms decrease in number to approximately 10 per cent of the maximum in two days.

The limited degree of treatment presently given Atlanta's wastes tributary to the Chattahoochee River is reflected by the high coliform concentration found in the river below the Clayton Plant. The peak coliform concentration averages 3,300,000 organisms per 100 ml. at a point 10 miles below the Clayton Plant during periods of average river flow. The coliform concentrations average 330,000 per 100 ml. 40 miles below the Clayton Plant, and 17,000 per 100 ml. 70 miles downstream. In contrast to the foregoing figures are the recommended maximum coliform concentrations of 1000 per 100 ml. for recreational waters and the requirement of the 1920's of 5000 per 100 ml. for water used as a source of supply for municipalities employing pre-chlorination or the equivalent. Modern treatment practices permit use of raw water supplies with coliform concentrations substantially in excess of the limit of 5000 per 100 ml. established in the 1920's.

The proposed Clayton Plant improvements will provide for an 85 per cent reduction of the organic matter in the waste and provide for chlorination within 15 minutes of contact time, which treatment should result in overall reduction of coliform organisms on the order of 8000 to 1. If similar treatment were given all wastes tributary to the Chattahoochee River, coliform concentrations of less than 5000 per 100 ml. could be accomplished even at low river flows and with the waste loads expected in the year 2000. This bacterial quality could not be maintained at all times, for during periods of heavy rainfall waste flows frequently exceed the capacity of water pollution control plants due to infiltration of ground water into sewers and stormwater from combined sewers, and a portion of the wastes must therefore be bypassed without treatment. Another major source of bacterial pollution is surface run-off which frequently has coliform concentrations on the order of several hundred thousand per 100 ml.

The substantial improvement in the bacterial quality of the Chattahoochee River which can be accomplished by chlorination of waste waters will permit use of the river as a source of supply about 24 miles below Clayton Plant. Reduction of the coliform concentration to less than 1000 per 100 ml., the accepted limit for recreational waters, is not possible even with today's best methods of treatment and disinfection by chlorination. The natural rate of decrease of the numbers of coliform is relatively slower at low concentrations, and it is expected that the bacterial quality obtainable by disinfection will not permit unlimited recreational use of the Chattahoochee River within 50 miles of Atlanta.

A detailed calculation of bacterial quality of Chattahoochee River water after secondary treatment and chlorination of wastes from Clayton Plant and others downstream is given in Appendix "C."

PLANS FOR RIVER REREGULATION ABOVE ATLANTA

It is understood that reregulation of the Chattahoochee at a site six or seven miles downstream from Buford Dam has been the subject of study by Federal agencies and is being supported by other private organizations who are interested in further development of the river. Nothing definite regarding the study or possible dates for construction can be ascertained. It appears that need for further regulation of the river may be essential within 15 to 20 years in order to supplement the high degree of treatment proposed for water pollution control plants whose effluents are discharged to the Chattahoochee. If this dam does not materialize as a Federal project, consideration should be given to a reregulation project by other interested parties as discussed in the following section.

ADDITIONAL REREGULATION

There are two sites suitable for impoundment of the Chattahoochee upstream from Clayton Plant, one below Morgan Falls Dam and one above. Solely from the standpoint of reregulation it would appear that the site upstream from Morgan Falls Dam is economically preferable. Either of these sites would augment the daily releases and more dilution water would be available to receive effluent from Clayton Water Pollution Control Plant during daily periods of maximum sewage flow, as well as effluents from other smaller treatment plants downstream. Increased river flow could be made to coincide more closely with daily operation of Atkinson and McDonough steam-electric plants, thereby reducing river temperature and thermal pollution downstream.

Theoretically, in order to provide complete reregulation of an average weekly low water flow of 1700 CFS at Atlanta gage, it is estimated that a minimum of approximately 5,100 acre-feet of effective storage would be required. However, in order to allow for future sedimentation, particularly in the upper reaches of such a proposed reregulation reservoir, and for taking care of unusual variations in inflow, it is suggested that new effective storage of at least 7500 acre-feet be provided.

1. Site No. 1. The Vinings Dam Site is the nearest available storage site on the Chattahoochee River upstream from the Clayton Plant, located about 3 miles above the plant, at or near the lower end of Long Island. A 43-foot dam at this site would back water to the tail race of the Morgan Falls Dam. With a draw-down of 13 feet, it is estimated that a usable storage of approximately 7800 acre-feet could be provided. Such a reservoir would be more than 7½ miles long, with a surface area of approximately 800 acres at full-pond level, and a shore line of about 14 miles.

While this site possesses many advantages, including the possibility of electric power production of about 40 million kilowatts in firm capacity, the effluents from a number of existing and planned pollution control plants in North Fulton and Cobb Counties must of necessity discharge into the reservoir area, thus nullifying the recuperative powers of a free-flowing Chattahoochee to assimilate these wastes prior to their use as a water supply source. As pointed out in another section of this report, pollution plant effluents from the highest degree of secondary treatment and effective chlorination will safeguard water quality in the Chattahoochee until after the year 2000. This will not be the case if stream reaeration is obstructed by this impoundment.

2. Site No. 2. The Roswell Dam Site is located on the Chattahoochee River, approximately 17 miles upstream from the Clayton Plant, being about six miles upstream from Morgan Falls Dam and about two miles upstream from the Roswell Bridge on U. S. Highway No. 19.

This site, according to information received from the Atlanta Division Office of the U.S. Engineer Corps was originally investigated for a dam 126 feet high. However, since construction of Buford Dam, the potential undeveloped head up to tailwater of Buford Dam is only 60 feet. The dam site is located on a shoal, with exposed crystalline bed rock.

Here, for reregulation storage, a 24-foot dam has been proposed. Fifteen-foot tainter gates, about 600 feet long, would be set on a concrete overflow spillway 9 feet high above ordinary tailwater elevation, to provide a 24-foot total depth at the dam site. It has been estimated that an effective storage of 7500 acre-feet could be provided with a draw-down of 6 feet, or an effective storage of 9400 acre-feet with an 8-foot draw-down, or 11,000 acre-feet with 10-foot draw-down. The reservoir area of the 24-foot dam would be approximately 1450 acres, and would back water up to Medlock's Bridge, a river length of about 10½ miles. This 24-foot dam at full-pool level would raise the water surface at Holcomb's Ferry Bridge (site of DeKalb County Intake) about 14½ feet.

Alternate construction at the Roswell Dam Site would provide a dam only 20 feet high, with 5-foot concrete base and 15 foot tainter gates, estimated to provide an effective storage of 8500 acre-feet with a 10-foot draw-down. The reservoir area would be 1150 acres, and the dam would back water about 8 miles to the foot of Jones Shoal. Such a 20-foot dam would raise the water surface at Holcomb's Ferry (DeKalb County Intake) about 10½ feet.

It is understood that the Roswell Dam Sites and certain portions of the reservoir area are owned by Georgia Power Company.

The power potential from either a 24-foot or 20-foot dam at the Roswell Site is relatively low, and will not be discussed here. The useful purpose of a dam at this site will be to provide complete reregulation of Chattahoochee River flow past Clayton Plant such that 1500 CFS average flow can be maintained at all times provided that average releases of 1634 CFS from Buford Dam operations are maintained as originally planned and authorized.

Estimated construction costs of these two dams are as follows:

24-foot dam	$4,200,000
20-foot dam	$3,850,000

Total project costs and annual charges will depend on acquisition of property and water rights, and negotiations with all interested parties for coordinating operation of tainter gates with the needs of Morgan Falls, the city and county governments, and steam-electric plants Atkinson and McDonough.

If this construction is under way at least during the 1980-1985 periods, there will be no danger of excessive pollution in a free-flowing Chattahoochee River as the result of discharge of adequately treated and chlorinated effluents from water pollution plants in the tri-county area.

EFFECT OF TREATED WASTES FROM THE ATLANTA AREA ON PROPOSED DOWNSTREAM IMPOUNDMENTS

The idea of developing the Chattahoochee River to provide navigation from the Gulf of Mexico to Atlanta has been under discussion for a great many years. The West Point Dam, already authorized for construction by the Corps of Engineers, will complete the river development to approximately 60 miles below Atlanta. Two additional dams, known as the Franklin Dam and the Cedar Creek Dam*, (referred to as the Newnan Dam by the Chattahoochee River Development Commission) have been proposed in order to complete the development of the river to Atlanta. The location of these proposed dams is shown on Plate 8.

It has been previously noted that the bacterial quality of the river can be improved greatly by the chlorination of treated wastes, but not to the extent that the river could be used for recreational purposes. If one or more of the proposed reservoirs is constructed, the backwaters of the uppermost reservoir would have coliform concentrations above the limit for recreational purposes even if stringent chlorination practices were followed. The discharge from the upstream dam would be virtually free of bacterial pollution due to Atlanta's waste, and the downstream reservoirs would therefore be safe for recreation.

Natural purification processes in the uppermost reservoir would also reduce the organic matter from Atlanta's treated wastes to the extent that the downstream reservoirs would be protected from the effects of the wastes. The oxygen level in the backwaters of the uppermost of the reservoirs constructed will be affected due to the fact that the rate at which the depleted oxygen in water is replenished from the atmosphere is substantially less in still water than in running water. The degree of oxygen depletion is dependent on the distance of the backwaters of the uppermost reservoir from the source of the treated wastes, which determines the extent of self-purification and dilution which will occur before the water reaches the impoundment.

The backwaters of the proposed West Point Dam, 60 miles below the Clayton Plant, would not suffer excessive oxygen depletion. The effect of Atlanta's treated wastes on the oxygen levels in the backwaters of either the Franklin Dam or the Cedar Creek Dam, whichever is the uppermost constructed, would be severely aggravated by thermal pollution from the steam-electric generating plants located in the backwaters of the reservoirs. Thermal pollution from the generating plants causes stratification of the impounded waters, significantly reducing the rate at which the depleted oxygen is replenished from the atmosphere. It is probable that excessive oxygen depletion would occur in backwaters of the Franklin Reservoir, which extend to within 40 miles of the Clayton Plant. If the Cedar Creek Dam were to be constructed, the backwaters would extend to the Clayton Plant effluent structure and excessive oxygen depletion would undoubtedly occur unless some plan could be devised to disperse the wastes effectively throughout the upper reaches of the reservoir.

Estimates** by the Corps of Engineers of the cost and benefits resulting from the construction of the proposed Franklin and Cedar Creek Dams have not shown the projects to be economically justifiable. The ratio of benefits to costs of 0.9 was determined for both of the proposed reservoirs even though considerable recreational benefits were assigned to the projects. However, it was stated in the conclusions of the studies in House Document No. 570 "that the plan of improvement consisting of a combination of dams located at sites near West Point, Franklin and Cedar Creek would provide a sound basis for the future development of the Chattahoochee River between Langdale and Morgan Falls and should be adopted as the basis for the improvement of that reach of the river." Accordingly, consideration has been given in the following section to the proposal by the Study Commission to divert Atlanta's waste to a point below the Cedar Creek Dam in order to permit recreational use of the proposed Cedar Creek Reservoir.

**"Chattahoochee River, West Point and Franklin, Georgia; Letter from the Secretary of the Army" — House Document No. 570, 87th Congress, 2nd Session.

CEDAR CREEK PROJECT

The report of the U. S. Study Commission on Southeast River Basins (Appendix 7, 1963) contained a proposal to construct what was termed the Atlanta Pollution Abatement Project on a branch of Cedar Creek. This project would have a small regulating dam and reservoir located near the main dam proposed for the Cedar Creek Project on the Chattahoochee in Carroll and Coweta Counties just south of Whitesburg.

The plan for pollution abatement was predicated upon primary and secondary treatment for all municipal and industrial wastes originating on the east side of the Chattahoochee. All effluents from present and future water pollution control plants would then be carried in a pipe to the regulating reservoir. Aeration in the transmission pipe system would provide some tertiary treatment. The regulating dam would provide storage of waste effluents. The wastes would then be piped from the reservoir to a power turbine whose operation would be coordinated with discharges from the main Cedar Creek reservoir to obtain a proper dilution of sewage with river flow. The Commission's report further stated that this system or its equivalent should be planned "whether or when Cedar Creek reservoir is built."

The cost of the Pollution Abatement Project involved an investment of $67,800,000 of which 93 per cent represented the cost of pollution abatement, 7 per cent being allotted to the dam, reservoir, and power facilities. All but 3 per cent of the annual equivalent primary benefits of $8,660,000 were proposed to be charged to pollution abatement.

The total investment cost of the main Cedar Creek dam and reservoir project was estimated to be $60,000,000 of which $14,000,000 was assigned to recreational facilities representing 74 per cent of the annual equivalent primary benefits.

There are a number of fallacies in the proposal that the Pollution Abatement Project is necessary because of municipal and industrial wastes contributed to the river from the east side (Atlanta-Fulton-DeKalb areas) of the Chattahoochee.

1. Estimated population in areas west of the Chattahoochee represents an important portion of the potential pollution tributary to the Chattahoochee. It should be assumed that the amount of pollution will ultimately be in proportion to the relative future population residing in each area, somewhat as indicated in the following table:

TOTAL ESTIMATED POPULATION OF AREAS DRAINING TO CHATTAHOOCHEE RIVER

	Year 1985		Year 2000	
	West Side (Cobb-Douglas)	East Side (Atlanta-Fulton-DeKalb)	West Side (Cobb-Douglas-	East Side (Atlanta-Fulton-DeKalb)
North of Clayton Plant	94,500	79,500	146,500	157,500
Clayton Plant	—	619,000	—	686,000
South of Clayton Plant	250,000	218,500	415,000	325,600
Total	344,500	917,000	561,500	1,169,100
Per cent of total	27.3	72.7	32.5	67.5

As population on the west (Cobb County) side of the river approaches one-third of the total residing in areas tributary to the Chattahoochee, similar facilities for pollution abatement, if considered effective for Atlanta, should also be proposed for this additional pollution.

2. The pipe line and reservoir proposed for pollution abatement would produce smaller reductions in coliform bacteria than could be accomplished in the natural flow of the river itself. This is the most important facet in establishing criteria for safe recreational water quality, regardless as to the doubtful effectiveness of aeration in the pipe line for further BOD reduction. Coliform reduction is effected by the time and this factor alone can be depended upon after the maximum coliform kill by chlorination has been accomplished. Up to 90 per cent reduction can be expected in two days in summer and from two to four days in winter. The proposed pipe line and pollution abatement reservoir would provide at most from 1.3 to 1.7 days time for detention of sewage at average flows in the year 2000 before release of sewage into the Chattahoochee. Under the same conditions nearly two days detention and therefore a higher percentage of coliform kill would be provided by the unrestricted flow of the river itself before reaching Whitesburg.

Downstream users of the river for water supply such as at LaGrange and Columbus would contend with larger coliform counts as a result of the Pollution Abatement Project. The Cedar Creek Reservoir itself with a proposed storage of 184,000 acre-feet at minimum pool level and 318,000 acre-feet at normal pool level would provide detention periods of 300 and 535 days respectively for an average river flow of 3000 CFS (cubic feet per second). Coliform reduction in the reservoir itself would thus be ample although further BOD reduction would be slower because of a deficit in oxygen absorption which is characteristic of still waters in lakes.

3. The assumption that the proposed Pollution Abatement Project is necessary to protect the water quality of the Chattahoochee River is not consistent with estimates of the quantity of organic matter which the river can safely assimilate nor with reasonable estimates of the future organic loads tributary to the river. In the Study Commission Report, it was stated that "by the year 2000 adequate dilution of sewage plant effluents (from Atlanta area) would require a flow of about 3000 cubic feet per second." This quantity is not consistent with the minimum release of 1500 CFS from the Cedar Creek Dam proposed elsewhere in the Study Commission report. Studies by the U.S. Public Health Service* indicate that a flow of

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*Chattahoochee River Investigations -- Flow Requirements for Pollution Abatement Below Atlanta" Cincinnati Office USPHS 1949.

1500 CFS would be adequate for maintaining 5.0 PPM dissolved oxygen in the river at a river temperature of 25°C, if the population equivalent tributary to the river were 2,350,000 (34 per cent greater than the actual tributary population of 1,752,500 in the year 2000 as estimated in this report). Estimates of the required dilution for maintaining 4.0 PPM dissolved oxygen, the minimum level stipulated by many States, indicate that a flow of 1200 CFS would be adequate under the same conditions. (See Appendix "B".) Inasmuch as a minimum weekday (Monday) flow of 1200 CFS can be maintained at the Clayton Plant if releases from Buford Dam are properly scheduled, and since the minimum flow can be further increased by construction of additional reregulation facilities below Buford Dam, it is concluded that the Chattahoochee River can safely assimilate the treated wastes from the Atlanta metropolitan area beyond the year 2000.

4. Diversion of municipal and industrial wastes in a pipe conduit to bypass the proposed Cedar Creek reservoir would not entirely remove high counts of coliform bacteria from the river. The surface wash of cities which drains to artificial or natural outlets has been found to have high coliform indices ranging up to nearly one million per unit of 100 ml. used in such tests. Studies made in Detroit showed an average of 400,000 per 100 ml.

Storm water overflows from combined storm and sanitary sewer systems have been reported to contain upward of 4 million coliform per test unit. Since it would not be practical to design a sewage diversion conduit to carry all the stormwater, pollution from the combined system would need to overflow to the river and the proposed reservoir. Whenever such overflows occurred the storm overflow from Clayton Plant alone would exceed safe concentrations of coliform bacteria in the average flow of the Chattahoochee by 400 times or more.

Even if such diversion were practical, high coliform concentrations would be delivered more than 40 miles closer to downstream water works intakes.

EFFECT OF CEDAR CREEK DAM ON ATLANTA FACILITIES

The proposed reservoir levels to be created by Cedar Creek Dam will impose additional costs for construction of secondary treatment structures at the Clayton Water Pollution Control Plant and for improvements and additions to existing features of primary treatment and sludge digestion.

An examination of House Document No. 570, 87th Congress, 2nd Session, September 1962, reveals the following:

Top of dam	Elevation 767
Maximum spillway design pool	Elevation 760
Top of flood control pool	Elevation 755*
Maximum power pool	Elevation 745
Minimum power pool	Elevation 735

*Elevation 755 is the top of the steel tainter gates.

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The following statements are quoted from above-referenced documents:

"Additional flood control would be provided with 73,000 Acre Feet of storage between Elevations 755 and 758, using a plan of induced surcharge. . .

"Protection would also be required for structures in the Atlanta area including sewage disposal facilities owned by the City. . .

"Reservoir land requirements totaling 26,400 acres were determined from the area measured at spillway design flood pool Elevation 760."

It is clear from the above that the dam is specifically designed to use induced surcharge storage, whenever considered necessary or derisable above the top of the flood control pool at Elevation 755 up to Elevation 758 at the dam itself, and that the design flood pool is at Elevation 760.

The dike proposed for Clayton Plant improvements will be required in any case for natural or controlled flood levels in the river. Under present river flow conditions all existing and proposed structures may be dewatered for repair, cleaning or servicing at an ordinary low water of Elevation 743 in the river. If Cedar Creek Dam is constructed, the usual river level will fluctuate between maximum power pool Elevation 745 and maximum spillway design pool Elevation 760 for a major percentage of the time. Uplift from ground water levels inside the plant dike equal to or higher than river levels will be exerted against plant structures which are emptied for servicing. Floor levels of structures subjected to uplift are:

Existing structures	Elevation
Primary settling tanks	753
Proposed structures	
Grit tanks	756
Digesters	753
Activated slude units	748
Final settling	752
Chlorination tanks	752
Basements of various buildings	746-750

Proposed structures must be prepared for uplift pressures either by anchorage to tension piles or by special floor construction to balance uplift by means of its own dead weight. Tension piling cannot be added to existing structures. Providing added weight may exceed safe foundation loads and therefore require demolition and reconstruction of present facilities subjected to considerable uplift.

The most serious health hazard imposed by the Cedar Creek Project would be created by backing up flood waters over the Atlanta Water Works intake dame, subjecting the Atlanta area water supply to concentrated sewage pollution,not only from the Clayton Water Pollution Control Plant effluent discharged a short distance away on the lake reservoir, but by pollution from Peachtree Creek which carries waters polluted during flood periods from surface runoff and from storm sewer overflows. At the proposed maximum spillway design pool level of Elevation 760, the intake dam used by Atlanta Water Works would be submerged 12 feet and the ordinary low water level at the mouth of Peachtree Creek would be submerged 17 feet.

A new intake would need to be constructed a considerable distance upstream from Cobb and Fulton County pollution control plants which discharge their effluents to the river. These plants have been planned and constructed to make use of several miles of river flow for oxygenation and dilution. The self-purification power of the river receiving these effluents will be greatly lowered by the backwater of Cedar Creek reservoir which will extend upstream some three or four miles above the present Atlanta Water Works intake.

WATER QUALITY REQUIRED FOR CEDAR CREEK RESERVOIR

It has been shown in this report that the Chattahoochee River can assimilate the wastes from the metropolitan area until the year 1985 for certain conditions of river flow and 85 per cent secondary treatment of wastewater. It has been noted that the proposed diversion of Atlanta's wastes to a point below the proposed Cedar Creek Reservoir is unnecessary as regards the free-flowing river, and would result in no significant benefit from the standpoint of pollution abatement. It is concluded that the cost of measures regarding treated wastes made necessary by the construction of the proposed reservoir should be assigned to the reservoir rather than to "pollution abatement."

The quality of water which is to be maintained in the proposed reservoir will depend on the uses made of the reservoir waters. There are two standards of water quality to be considered, the first being the maintenance of adequate oxygen levels in the water for sustaining normal aquatic life, and the second being the maintenance of bacterial quality so as to permit recreational use of the waters.

For most uses of the proposed reservoir, such as power production and navigation, the maintenance of oxygen levels so as to sustain normal aquatic life will be adequate for the temperature of the river water as it passes Clayton Plant. It has been stated that the impoundment of a free-flowing stream decreases the rate at which atmospheric oxygen will enter the water, thereby decreasing the capacity of the waters to assimilate wastes. The effects of the impoundment of the Chattahoochee River by the proposed Cedar Creek Reservoir on the assimilative capacity of the waters will be severely aggravated by the thermal pollution from the steam electric generating plants which results in more rapid depletion of oxygen at higher temperatures and in thermal stratification of the wastes.

In order to maintain oxygen levels in the proposed Cedar Creek Reservoir, it will be necessary either to discharge the heated water so as to insure thorough mixing with the receiving waters, to increase the rate of reaeration of the river by artificial means, to disperse the treated wastes throughout the upper reaches of the reservoir, or resort to all three of the above means.

Obtaining a suitable bacterial quality for recreational use of the reservoir for contact water sports is not possible, even after intensified chlorination, because of contamination from stormwater overflows and surface wash. Satisfactory bacterial quality can be obtained by several days impoundment which would mean that water sports must needs be banned for the upper reaches of the reservoir.

In certain parts of the country tertiary treatment of pollution control plant wastes to obtain over 95 per cent removal of organics has been tried on a small scale. To obtain a few additional percentage points of organic removals for wastes already given secondary treatment by the Atlanta Metropolitan Sewer System would require downstream acquisition of several thousand acres of land and expenditures of additional sums in excess of those which are proposed for the entire Clayton Plant improvements.

Consideration of further treatment beyond accepted practice and beyond the criteria of 85 per cent treatment established by the Georgia Water Quality Control Board is not the obligation nor the responsibility of the Atlanta Metropolitan Sewer System nor of other treatment plants conforming to the best known practice in water pollution control.

CONCLUSIONS ON CEDAR CREEK RESERVOIR

1. Under the above conditions the Pollution Abatement Project is not necessary nor effective for

further treatment of sewage wastes on the east side of the Chattahoochee from the Atlanta-Fulton-DeKalb area. Pollution from the west side of the river, amounting to 27.3 per cent of the total in 1985, more in later years, has been overlooked. It should not, therefore, be referred to as the "Atlanta" Pollution Abatement Project.

2. The Pollution Abatement Project will accomplish less than the free-flowing river itself and will deliver a higher concentration of BOD and coliform bacteria more than 40 miles downstream into the upper reaches of Franklin Reservoir.

3. Adequate dilution can be provided by the Chattahoochee at Atlanta until about 1980-1985, after which time a higher degree of treatment (if possible) or additional dilution by further reregulation below Buford Dam will suffice for a free-flowing river.

4. High bacterial counts in the river from surface wash are unavoidable with or without the best control of polluted wastes conforming to best practice. A program is now under way to separate storm and sanitary sewerage facilities of the Atlanta Metropolitan Sewer System, leading ultimately to abandonment of the combined system used for many years. This will involve unusual costs, and will require many years for completion.

5. The five-county area of Gwinnett, DeKalb,

Cobb, Fulton, Douglas and the Atlanta metropolitan area should not be denied the right to use the self-purification power of the Chattahoochee for dilution and further oxygenation of sewage and industrial wastes after treatment to the degree required by the Georgia Water Control Board for safe use of the river in its natural state. If the power of the river to absorb these wastes is diminished by downstream construction of dams and reservoirs by Federal agencies, such construction should not be undertaken unless provision is made for assuming the financial burden of additional pollution control and water treatment facilities made necessary by such Federal projects.

SUMMARY OF TREATMENT REQUIREMENTS

1. Treatment requirements stipulated by the Georgia Water Quality Control Board provide that all wastes discharged into the Chattahoochee River from Clayton Plant and from other plants located downstream should receive approximately 85 per cent secondary treatment, should produce a relatively stable plant effluent, should obtain virtual elimination of harmful bacteria by chlorination and should maintain an ample dissolved oxygen content in the Chattahoochee River as the flows pass the treatment plant.

2. This degree of treatment can readily be produced by Clayton Plant for a river temperature of

20° C. (the present average temperature) dependent solely upon average minimum monthly flow releases from Buford Dam of 1600 CFS and reregulated minimum instantaneous flows of 750 CFS from Morgan Falls over certain portions of the day. This minimum average flow of 1600 CFS from Buford Dam was the method of operation provided by the 80th Congress in 1947 when construction of the dam was authorized. After making allowances for withdrawals for water supply from the river and the rate of sewage inflows, this will result in a minimum average monthly flow of 1500 CFS during week-days (i.e., Tuesday through Friday) as the river flows past Clayton Plant. Minimum average flow on Mondays will be 1200 CFS and the minimum instantaneous flows during certain parts of the day will be 700 CFS at Clayton Plant. Consideration should be given to the possibility of increasing the minimum average monthly releases from Buford. The population tributary to Clayton and other water pollution control plants downstream is estimated to show an increase of 189 per cent for the period from 1950 through 1985 and 209 per cent for the period from 1950 to the year 2000. The strength of wastes in terms of population equivalent will have increased to an estimated 273 per cent of the 1950 strength by the year 1985 and to 358 per cent by the year 2000. As time goes on, it will become more obvious that releases planned in 1947 to take care of Atlanta's needs are inadequate to meet the requirements of a rapidly growing city.

3. The above requirements for degree of treatment can be met by water pollution control plants located downstream, when Atkinson and McDonough steam-electric generating plants are operating at full load, for minimum average weekday flows until the year 1985. A satisfactory dissolved oxygen content cannot be maintained in the river during minimum daily flows without provision for one or more of the following:

a. Curtailment of steam plant operations during minimum flow periods.

b. Discovery of new methods of treatment by which higher than 85 to 90 per cent BOD removals can be achieved.

c. Complete reregulation of the river such that a minimum average weekly flow of 1500 CFS past Clayton Plant can be maintained at all hours of the day.

4. The bacterial water quality obtainable in the river by the above treatment will be satisfactory for water supply use for other communities located 24 miles or more below Clayton Plant. Water quality will not be satisfactory for contact water sports which ordinarily require a coliform bacterial content of not over 1000

per 100 ml.

5. If the proposed Cedar Creek Reservoir is constructed, a satisfactory dissolved oxygen content cannot be readily maintained in the reservoir because of "thermal" pollution by steam-electric generating plants. After 40 river miles below Clayton Plant the BOD effect will again be accelerated by temperature increase from operations of the Yates steam-electric plant, although reservoir impoundment at this point would improve the bacterial quality of the water by providing the storage needed to obtain complete kill of coliform bacteria.

6. The present Clayton Plant site, by the addition of adjoining property described later in this report, can be utilized for additions and improvements which will adequately treat 120 MGD of wastes expected to be discharged by the Metropolitan Sewer System approximately in the year 2000.

7. After the year 2000 in order to meet further increases in waste flows an estimated quantity of 17 MGD contributed from the Proctor Creek watershed should be diverted to a site on Sandy Creek near Fulton County Airport where a combined plant can be planned to treat wastes from both Proctor Creek and Sandy Creek watersheds.

8. Long-term plans already under way for eliminating the present combined sewer system and providing

separate systems for storm water and sanitary wastes will permit further reduction in average flows discharged to Clayton Plant and will result in a higher overall degree of treatment.

PROPOSED IMPROVEMENTS

R. M. CLAYTON WATER POLLUTION CONTROL PLANT

Description of Present Plant

The present plant, constructed in 1936-1938, and with minor improvements made in 1953, was designed as a primary type treatment plant to remove approximately one-third of the pollution from an average daily flow of 42 MGD of waste. The general features of this plant are shown on Plate 9.

The plant now receives approximately 65 MGD of waste water, or 50 per cent in excess of the design load. The existing structures are described briefly as follows, and in order to establish an improvement program relative to the degree of required treatment, the effects of this overload, where pertinent, are also described.

1. The by-pass chamber contains adjustable overflow weirs normally set at an approximate elevation of 770, which is above the high water elevation in the Chattahoochee River. The chamber is also fitted with sluice gates to divert the waste from the entire plant to the river.

2. The screen and grit building, improved in 1953, removes an average of 1.1 cu. ft. of screenings and 1.9 cu. ft. of grit per million gallons of waste water.

3. The chemical mixing and aeration tanks were originally intended to be used for chemical precipitation during times of extreme low river flow. Their use for this purpose has been abandoned but they have occasionally been used, with minor benefit, as pre-aeration tanks.

4. The four 112-foot diameter primary settling tanks remove 50 to 60 per cent of the suspended solids. Field measurements indicate that the maximum hydraulic capacity of each tank is 23 MGD.

5. The four 90-foot diameter sludge digestion tanks, two primary and two secondary, have a total gross volume of 544,000 cu. ft. This amounts to less than 1 cu. ft. per capita for 1965 conditions and represents an acute shortage of digester capacity, especially when one tank is removed from service for cleaning.

6. Two 8-foot diameter by 8-foot long vacuum filter drums dewater digested sludge and produce sludge cake suitable for hauling from the site. These drums are badly deteriorated and have a capacity of about one-half that needed for the present loading of solids.

7. The chemical and power building originally housed the vacuum filters and appurtenances, chemical storage and handling facilities, engine-driven generators, electrical control centers, offices and a laboratory. The engine-driven generators have been removed, the chemical storage bins have been abandoned as storage bins and made into an air raid shelter, and chemical handling equipment has been dismantled. Electric power is now obtained from Georgia Power Company lines.

8. One chlorinator of the three 2000-pound machines installed originally in the chemical and power building is now operative, but is obsolete and in poor condition. Chlorine is applied in solution through rubber-lined pipe to any one of three points of application—ahead of the screens, at the influent of the chemical mixing tanks, and at the influent of the primary settling tanks. A temporary upstream chlorinating station delivers about 1 PPM of chlorine at average flow.

The structures appear to be sound in general, although some parts, such as windows and pre-cast roofs, show the effects of about 29 years use and need replacing.

Capacity of Proposed Plant Improvements

Elsewhere in this report calculations and estimates establish the need for a plant which will remove a minimum of 85 per cent of the pollutional load from a nominal average daily flow of 100 MGD and that this capacity normally will suffice until the year 1985, after which time additional capacity will be needed to treat a waste flow of 120 MGD anticipated by the year 2000.

The existing plant site of 25 acres is limited in extent by the relatively new Marietta Boulevard, the Chattahoochee Water Treatment Plant constructed across Plant Street by Atlanta Water Works, the Seaboard Air Line Railway, and the Chattahoochee River. An additional 21 acres west of the Clayton Plant site between Marietta Boulevard and Old Marietta Road was found to be available and has been acquired by the City. In order to coordinate plant operations, the two sites should be interconnected by a vehicular tunnel crossing Marietta Boulevard.

It is understood that no additional land is available for future expansion nor is there a feasible plan which can be devised for expanding a portion of the plant in other areas nearby. Accordingly, the maximum plant capacity practical for the available area should be planned and built for an ultimate capacity of 120 MGD expected to be needed by the year 2000. A variable circulating hydraulic load created by the activated sludge and sludge thickening processes may increase the effective flow to higher than 100 MGD by 1985. Whenever the average sewage flow reaches 120 MGD or the effective rate due to plant processes approaches the design figure, it will be necessary to divert an estimated 17 MGD originating in the Proctor Creek watershed to an enlarged plant combined with Sandy Creek as proposed for construction near the Fulton County Airport.

Order of Construction

As stated in the description of the existing plant, the most urgent need is for sludge handling facilities. These features followed by screenings—grit improvements, additional primary settling tanks, and ample chlorination will accomplish the greatest degree of improvements in the quality of the plant effluent. Secondary treatment by activated sludge and final settling will produce the desired 85 per cent removal of pollutional matter from the waste flow.

Power for Plant Operation

Electric power for plant operation will be available from two 44 kv. lines now serving both Clayton Plant and the Chattahoochee Water Treatment Plant. A certain amount of power would be obtainable from digester gas for operating air blowers required for the activated sludge process. The cost of using digester gas for power is determined by amortizing capital expenditures for gas storage and gas equipment which would be needed for its utilization. Natural gas is obtainable from a supply line near the plant site. The relative cost of different fuels for operating internal combustion engine drives for blowers is as follows:

	Cost per Million BTU
Digester gas	$0.025
Natural gas, interruptive service	$0.30
Natural gas, firm supply	$0.40 to $0.50
No. 2 fuel oil	$0.73

Electric power is available at a very cheap rate of 7.5 mills per kilowatt hour and has proved to be unusually reliable. There has been only one service interruption of more than one minute in nearly three years' time, the most serious one occurring about two years ago and of four minutes' duration.

Summary of Recommended Improvements

It is proposed to retain those structures which can be used advantageously in the new plant, as shown on Plate 9. The same structures with additional new units recommended are shown on Plate 10. The new structures and units recommended fall naturally into four categories.

1. Waste water treatment facilities: Overflow and by-pass structure, bar screens and grit tanks, four primary settling tanks, ten aeration tanks, ten double final settling tanks, blower building, chlorine contact chamber, with chlorination equipment. Four existing primary settling tanks will be retained but clarifier mechanisms will be replaced.

2. Sludge handling facilities: Ten sludge thickeners, four sludge digestion tanks, each 125-foot diameter, a sludge dewatering building utilizing centrifuges, and an incinerator installation. Four existing digestion tanks will be retained.

3. Service buildings: Laboratory, classroom, administrative offices, combined shop and warehouse, and garage.

4. Outside features: Relocation of existing dike and additional new dike to protect the plant from river high water, connecting flumes, pipe tunnels, vehicular tunnel, the necessary storm drains and water lines.

A description of the new facilities appears in the paragraphs which follow.

Waste Water Treatment Facilities

The new overflow and by-pass structure is at the junction of the 96-inch Peachtree Creek trunk sewer, the 48-inch Nancy Creek trunk sewer, and the 48-inch Proctor Creek trunk sewer. It differs from the existing plant by-pass chamber in that its capacity is greater and its arrangement is such that each of the three influent sewers can be by-passed independently to the river. Its purpose is to limit the maximum amount of wastes entering the plant by means of adjustable overflow weirs and to make it possible to by-pass the plant either during excess storm flow, in times of emergency, or in particular for short intervals during plant construction.

The recommended screens are four in number, each mechanically cleaned and in a channel immediately ahead of a Parshall metering flume, any three of which will have a total capactiy of 200 MGD. That part of the structure containing the bar screens themselves would be housed both for fly control and protection from freezing weather. This structure would require artificial ventilation and deodorization of exhaust gases by some process similar to catalytic combustion or activated carbon filters. It is proposed to transfer the screenings by an enclosed overhead belt or pneumatic conveyor to the incinerator for reduction to ashes.

The proposed grit removal tanks are of the aerated type, two in number, each with a capacity of 180 MGD and with grit removal by tubular conveyor to the same belt or pneumatic conveyor which conveys screenings to the incinerator where the organic material in the grit would be reduced to ashes.

The addition of four 112-foot diameter primary settling tanks to the existing four of the same size would give a total surface area of 78,800 square feet or a unit surface loading of 1520 gallons per day per square foot. This is less than the present loading, leading to the expectation that suspended solids removal will equal or better the results now achieved. In addition to the four new primary settling tanks, two new sludge pump houses will be required to house sludge and scum pumps. Each of the primary tanks will have a sludge well for visual control of sludge withdrawal and in addition will be arranged so that sludge withdrawal can be made automatic, controlled by a sludge density meter and timed program controller.

As pointed out in a previous section, some form of modified or high rate activated sludge is the only established type of secondary treatment which can be constructed within the available site area. The nitrified sludge interchange or Kraus process is best adapted to the site and to conditions of intermittent operation at times of excessive storm run-off flows. Varying degrees of treatment can also be more effectively accomplished by use of this process than by any other which has been suitably developed. For flexibility and operating economy the tanks are arranged to operate in parallel, using a modified activated sludge process for reduced flows and degree of treatment or as the nitrified sludge interchange (Kraus) process for design flows and the highest desired removals.

Ten two-pass tanks, each tank 60-feet wide by 300-feet long, will be required, with piping arranged so that five tanks can be used as aeration tanks and the remaining five as nitrified sludge tanks. For efficient operation, all air blowers, pumps and piping involving waste and activated sludge will be placed in a building between the final settling tanks and aeration tanks.

Three blowers, each having a capacity of 35,000 CFM (cubic feet per minute) at 8 PSI (pounds per square inch) pressure will be required for diffuser air service, and three additional blowers, each supplying 22,500 CFM at 4 PSI, will be required for distributed air for the aeration tanks. One extra small blower will be needed for grit tank and connecting channel aeration. The larger blowers will each require 1500 HP drives, utilizing dual fuel gas engines for digester gas fuel when available and natural gas when digester gas is insufficient. The smaller blowers will each be operated by 400 HP electric motor.

The economics of using gas engines for the 1500 HP drives instead of electric power is as follows:

Cost of gas engines:			
Installed cost of three 1500 HP engines	$690,000		
Heat recovery equipment	57,000		
Gas storage	100,000		
Total cost	$847,000		
Anual debt service, interest at 3½ %, 20 yrs.		$ 59,600	
Annual maintenance and labor		35,000	
Total annual cost of egines			$ 94,600
Cost of electric motors:			
Installed cost of three 1500 HP motors	$ 46,500		
Annual debt service, interest at 3½ %, 20 yrs.		$ 3,300	
Annual power cost, 19,600,000 kw hours @ $ .0075		147,000	
Annual maintenance and labor		2,000	
Total annual cost of motors			$152,300
Estimated annual saving in favor of gas engines			$ 57,700

The available site area again restricts the choice of final settling tanks to the rectangular type and precludes the use of equally loaded circular tanks. The tanks are twenty in number, each tank being 40-feet wide by 187.5-feet long, arranged in twin banks with a unit surface settling rate of 800 gallons per day per square foot. For effective removal of settled sludge, cross collectors are used in the center of the tanks.

The chlorine contact chamber, designed for 15-minute detention at maximum flow, is located at the effluent end of the final settling tanks and supports the chlorinator building, four 8000-pound per day chlorinators and chlorine storage platform.

Sludge Handling Facilities

Lack of area on the site compels the consideration of sludge disposal by hauling to a remote land fill. If sludge cake is produced, approximately 97,500 cu. yds. per year must be hauled to the land fill area. If the sludge cake is reduced to ashes by incineration, approximately 15,300 cu yds. per year must be hauled to the fill area. The problem of sludge handling facilities and sludge disposal must therefore be considered jointly.

Descriptions and estimated construction costs for the six most feasible combinations of sludge handling facilities are listed in the following. Total dry solids removed in each feature of sludge processing is given in flow sheet form on Plate 11.

METHOD No. 1
(See Sludge Diagram No. 1)
Description: This method requires 6 digesters, 8 elutriation tanks, and 3 vacuum filter drums; it requires 1850 connected HP and produces 267 cubic yards of sludge cake per day.
Estimated Construction Cost — $3,813,000

METHOD No. 2
(See Sludge Diagram No. 2)
Description: This method requires 6 digesters, 8 elutriation tanks, 3 vacuum filter drums and 2 furnaces; it requires 2050 connected HP and produces 42 cubic yards of ash per day.
Estimated Construction Cost — $5,144,000

METHOD No. 3
(See Sludge Diagram No. 3)
Description: This method requires 6 digesters, 6 centrifuges for dewatering and 2 furnaces; it requires 2100 connected HP and produces 42 cubic yards of ash per day.
Estimated Construction Cost — $4,604,000

METHOD No. 4
(See Sludge Diagram No. 4)
Description: This method requires 4 digesters, 6 centrifuges for dewatering, and 2 furnaces; it requires 2000 connected HP and produces 42 cubic yards of ash per day.
Estimated Construction Cost — $3,778,000

METHOD No. 5
(See Sludge Diagram No. 5)
Description: This method requires 4 digesters, 7 centrifuges for dewatering, and 3 furnaces; it requires 5200 connected HP and produces 42 cubic yards of ash per day.
Estimated Construction Cost — $4,580,000

METHOD No. 6
(See Sludge Diagram No. 6)
Description: This method requires 4 digesters, 9 centrifuges for dewatering, and 3 furnaces; it requires 5400 connected HP and produces 42 cubic yards of ash per day.
Estimated Construction Cost — $4,852,000

The above methods all differ in construction cost, maintenance and repairs, power requirements, chemical and labor requirements, and the amount of end product to be removed from the site.

In order to compare the annual costs of these methods, the following items are pertinent:

1. The large blowers requiring 1500 HP each can be more economically driven by sludge gas engines than by electric motors, if sludge gas is available. Method No. 1 will produce sufficient gas to supply these engines and heat the sludge digesters. Methods No. 2, 3 and 4 will also produce sufficient gas to supply the engines and heat the digesters with heat recovered from the engines in addition to meeting incineration requirements. Methods No. 5 and 6 will produce sufficient gas to heat the digesters, after meeting incineration requirements, but not to supply the engines. The blower drives for Methods No. 5 and 6 must therefore be electric motors.

2. Chemical costs for vacuum filtration are based on $10 per ton of dry solids.

3. Property for the land fill has not yet been acquired, but preliminary surveys indicate that it will be approximately 15 miles from Clayton Plant. It should contain about 200 acres and its probable cost with unloading facilities should be approximately $225,000. It should last, as a land fill for filtered sludge, about 15 years. Based on this estimate, a hauling cost of $0.08 per cubic yard mile and on a loading cost of

$0.10 per cubic yard, the 97,500 cubic yards of sludge cake produced per year can be disposed of at an annual cost of $142,700. If sludge cake is incinerated, the same land fill area should last 100 years. Based on the same hauling and loading costs, the 15,300 cubic yards of ash produced per year can be disposed of at an annual cost of $35,700. Charges for debt service on construction cost will expire after 20 years. The cost of sludge or ash removal from the site contains the cost of debt service on $225,000 for acquisition of land for fill area. After 20 years the expiration of debt service cost will reduce the cost of product removal by $15,840 annually.

The annual cost of each of the six sludge handling methods follows:

Sludge handling method	1	2	3	4	5	6
Debt service on construction cost	$268,400	$362,100	$324,100	$266,000	$322,400	$341,600
Maintenance and repairs	18,200	23,200	33,100	31,400	37,700	45,400
Power	63,500	70,300	72,000	68,600	178,300	185,200
Chemicals	202,000	202,000	100,000	100,000	100,000	100,000
Labor	60,000	66,000	42,000	46,000	52,000	58,000
Sludge or ash removal from plant	142,700	35,700	35,700	35,700	35,700	35,700
Total annual cost	$754,800	$759,300	$606,900	$547,700	$726,100	$765,900

In all six methods sludge is to be thickened before digestion in a flotation type thickener which has proved successful at the South River Plant in Atlanta and elsewhere. This is the most practical method. Comparisons were made with resettling of activated sludge in the primary tanks, with thickening in a gravity type process and by means of centrifuges.

Method No. 4 using centrifuges and incineration, represents an annual saving of more than $200,000 over sludge filters and either hauling or incinerating sludge. If digester capacity could be reduced for sludge filters, there would still be an annual saving of more than $160,000 for centrifuges and incineration.

Centrifuge equipment has been modified in design from that in wide use for other materials and has a successful history of dewatering sludge. The principal disadvantage is in the steady wear of the periphery of the centrifuge vanes, requiring crane and hoist dismantling and rebuilding of vanes by welding on the site. With sludge filter equipment a similarly tedious maintenance procedure is required to renew filter cloth. The centrifuge manufacturer will furnish a performance bond which guarantees 70 per cent recovery of solids and dewatering incoming sludge of 4 per cent solids to a range of 18 to 22 per cent solids required for incineration.

Method No. 4 is therefore recommended and used for project estimates.

Four 125-foot diameter digesters with a total volume of 1,800,000 cu. ft. are used. This represents a unit solids loading of 0.132 pounds per cu. ft. per day and a displacement of 13.5 days, which will be ample for the required gas production. These units are arranged for use as primary digesters, leaving the four existing sludge digestion tanks for storage. Sludge heaters operating on sludge gas are needed to operate as heat exchangers whenever hot water is not available from the engine heat recovery system.

The proposed sludge dewatering system consists of six centrifuges, two of which are standbys, arranged for charging two sludge furnaces with 18 to 22 per cent sludge cake using two belt conveyors. The centrifuges are to be housed in a separate building. They will be arranged to discharge to storage bins or to overflow areas on the site by means of belt conveyors if one or both furnaces should be out of operation or operating under excess loading for short periods of time.

The proposed multiple hearth type of furnace is simple in construction and has a history of successful operation since 1935. Two competitive firms have made over a hundred installations and twenty more are under construction.

Organic matter in screenings and grit is readily incinerated in this type furnace, resulting in a minimum amount of refuse hauling from the plant.

Other Sludge Disposal Means

Three other types of sludge reduction by a patented process of oxidation or incineration were studied. The least expensive process is estimated to cost $159,000 less for construction than the No. 4 method recommended in the preceding, but the annual cost would be $88,250 greater.

The Zimmerman (Sterling Drug) process of wet air oxidation was devised on the principle that sludge could be combined with compressed air in a closed vessel so as to oxidize or "burn" at lower temperatures than used by incineration. The best known example of this process is a 200-ton per day installation at the West-Southwest Treatment Works of the Metropolitan Sanitary District of Greater Chicago, placed in operation in 1962. Maximum temperature is 525° F. and maximum pressure is 1750 pounds per square inch.

A later development in this process involves oxidation in a 300° to 400° F. temperature range and at much lower pressures of 150 to 300 pounds per square inch.

In both processes the residue is in excess of that obtained by conventional incineration but is sterile and biologically stable and reported to be easily compacted by settling and draining.

The FS sludge disposal system developed by Dorr-Oliver, Inc. features a "fluidized" bed of heated sand in which sludge is reduced completely to ash at high temperatures. The ash residue is quenched in water for hauling away from the site. Screenings and grit removed from the sewage flow must be handled separately.

Following is a tabulation of estimated capital expenditures for construction and of annual costs for the cheapest of these three other processes, the Zimmerman low pressure process. The capital costs for construction are somewhat cheaper than for the lowest of the first six sludge handling methods, but annual costs, including debt service, were found to be $88,250 higher than for sludge handling Method No. 4 previously recommended.

Capital Expenditures	
Construction cost	$3,619,000
Annual Costs	
Debt service on construction cost	254,800
Maintenance and repairs	78,000
Power	88,000
Chemicals	75,000
Labor	56,000
Sludge or ash removal from plant	84,150
Total annual costs	$ 635,950

The combination of short period digestion followed by conventional sludge incineration recommended and described as sludge handling method No. 4 is the most economical and from experience to date is considerated to be more reliable and easier to operate than any of the three alternatives described in this section.

Service Buildings

It is proposed that the present chemical and power building be remodeled into an administration building, the first floor of which is to be made into a reception room, superintendent's office, operators' office, lunch room, space for motor control centers and for computer type electronic devices for recording plant operating data. It is also recommended that a west wing of approximately 2500 square feet be added to this building for a laboratory and an east wing, of equal size, be added for a class room. Remodeling of this building will include dropped ceilings, heating and air conditioning facilities, plumbing and wiring.

Other recommended service buildings include a garage, a shop and warehouse adequate to maintain equipment used in this plant and smaller plants in this area of Atlanta.

Outside Utilities

It is recommended that process piping and electrical conduit be placed in underground concrete tunnels leaving water lines and yard drainage for direct burial in earth.

Control of Operations

It is realized that, in a plant of this size, operations should be made reliably automatic as far as possible. These operations would include sludge pumping, scum pumping, equalization of flows to the aeration tanks, and chlorine dosage. Labor requirements should be further reduced by manual control at operating consoles remote from the operation itself. It is therefore recommended that an operating console be located in the administration building to control all routine operations on the east side of Marietta Boulevard. These operations involve primary sewage treatment and sludge handling. Another operating console should be placed in the mall formed between the final settling tanks and activated sludge tanks to control all operations involving secondary treatment, including air supply for the aeration tanks. All critical variables and operations in the entire plant should be monitored in a supervisory center so located that general results of operations can be observed visually during the day and in detail by means of closed circuit television day and night.

A review of the electrical power interruptions shows that, even though the interruptions are of short duration, they can be expected. This leads to the recommendation that remote and automatic controls be made pneumatic for the sake of reliability, with adequate capacity for stored air. In order to minimize the task of changing charts on numerous recorders required for a plant this size, it is recommended that a 50-point computer type "data logger" be provided in the administration building, leaving only three variables whose measurement could be continuously recorded to advantage. These three variables would be the volume of flow to the plant, the dissolved oxygen of influent wastes, and the dissolved oxygen of the plant effluent.

As aids to plant operation, it is recommended that instrumentation be provided to measure continuously or periodically the dissolved oxygen, pH, conductivity, temperatures, turbidity and solids concentration at the points needed and that they be recorded on the data logger.

Estimated Project Costs

Estimated project costs tabulated below are believed accurate for this locality and the date of this report. No attempt has been made to make correction for future inflationary trends.

Overflow and by-pass structure	$ 321,000	
Screen and grit structure	523,000	
Additions to primary settling tanks	816,000	
Aeration tanks	8,350,000	
Final settling tanks	3,460,000	
Chlorine contact chamber	475,000	
Blower building	3,200,000	
Sludge thickeners	1,700,000	
Sludge digestion tanks	1,630,000	
Modifications to existing sludge digestion tanks	57,000	
Sludge dewatering building	817,000	
Incinerator building	1,331,000	
Shop and warehouse	328,000	
Garage	300,000	
Administration building	636.000	
Wash water supply	180,000	
Gas storage	100,000	
Miscellaneous outside work	4,576,000	
Total construction cost		$28,800,000
Other costs:		
Land	$ 350,000	
Administration	150,000	
Engineering fees	1,540,000	
Resident engineer services	520,000	
Contingencies	1,440,000	
Total		$ 4,000,000
Total project cost		$32,800,000

Annual Costs

Annual costs include charges for debt service and the yearly cost of treatment plant operation and maintenance.

Annual financing costs for debt service are assumed to be similar to that now in use by the City of Atlanta for water works improvements, namely, 20-year revenue bonds for an estimated interest rate of 3½% obtainable in 1966.

Estimated annual costs for plant operation were obtained in general from information obtained in the preparation of this report or from experience elsewhere. The estimated costs of salaries and wages for operating personnel and other costs for plant operation compare most favorably with comparable plants in other cities. The total figure is for plant operation at full capacity. Initial operation is expected to be around 70% of the total.

Annual financing cost			
Debt service on $32,800,000 in 3½% bonds, 20-year			$2,309,000
Annual operating cost			
Power, 24 million kwh per year		$180,000	
Personnel services:			
Superintendent	$31,200		
Clerical	9,000		
Laboratory technicians	38,700		
Plant operators	280,000		
Maintenance mechanics	83,100		
Common labor	36,000		
Total, personnel services		478,000	
Chlorine		103,000	
Other chemicals		100,000	
Operating supplies		40,000	
Equipment repair		90,000	
Building and property maintenance		30,000	
Total annual operating cost			$1,021,000
Total annual costs, debt service and operation			$3,330,000

PROPOSED IMPROVEMENTS

UTOY CREEK WATER POLLUTION CONTROL PLANT

Description of Present Plant

The original plant was constructed in 1936 for primary treatment of 3 million gallons of waste water per day. Its capacity was increased in 1957 to 9 million gallons per day. Present flows are slightly less than the design capacity. The components of the present plant now in use, or usable, are shown on Plate 12 and described as follows:

1. Sewage flows by gravity through a 48-inch sewer, with a capacity of 21 MGD, to the screen chamber. Another 48-inch sewer having a capacity of 42 MGD, and a new sewage pumping station having a capacity of 15 MGD, are now being constructed on the plant site. A total flow of 36 MGD will thus be delivered to the existing screen chamber. This capacity can easily be increased to 44 MGD by installing increased pumping capacity.

2. The screen and grit structure consists of three channels. Each of two channels is equipped with screens and grit removal equipment and have a combined capacity of 22.5 MGD. Screenings are removed from the waste water, pass through a screenings grinder, and then are returned to flow. Grit is removed from two channels whose flow velocities are regulated by proportional weirs, elevated into a truck, and hauled to a landfill on the site. Approximately 4 cubic feet of grit are removed from each million gallons of flow. Both the screen and grit removal processes are performing satisfactorily, except when frozen, an infrequent occurrence. The third channel, with sluice gates and an overflow weir, is used as a plant by-pass or to relieve the plant of excessive flows.

3. The four primary settling tanks were built in pairs. The first pair, constructed in 1936, consists of two 50-foot diameter tanks and one sludge pump house. The tanks have separate scum and sludge wells, served by a common sludge pump, and piping is arranged so that valves must be manipulated when one tank or the other is pumped alternately. These tanks are not now in service, but they can be and should be in operation. The second pair, constructed in 1957, consists of two 75-foot diameter tanks and a sludge pump house. These tanks are each equipped with combined scum and sludge wells and remove approximately 62 per cent of the suspended solids when loaded at 725 gallons per square foot per day. The maximum hydraulic capacity of the first pair of tanks is 8.25 MGD, and of the second, 18.75 MGD, for a total capacity of 27.0 MGD.

4. Waste flow passing through the plant is measured by a 2-foot Parshall flume meter, located on the primary settling tank effluent. Its maximum capacity is 20 MGD.

5. The plant effluent line is a 36-inch sewer about 7000 feet long and has a maximum capacity of 19.6 MGD. A manhole in this line has a hole in the side which serves as an overflow, relieving the outfall sewer of some excess flows and discharging them into Utoy Creek which is frequently dry. This, however, does not prevent manholes down stream from overflowing during storm flows.

6. The two sludge digestion tanks, 30 feet in diameter, constructed in 1936, are obsolete and have recently been abandoned. Two 60-foot diameter tanks, constructed in 1957, and now in use, have a total capacity of 141,400 cubic feet and a capacity above a 30 degree cone of 105,600 cubic feet.

7. Sludge drying beds have an area of 58,000 square feet and drain into the plant effluent line.

8. The only service building consists of a comparatively small new garage.

9. The plant is at present well screened from public view by trees and the topographic layout. The area available for construction under this and future programs is restricted but adequate for the type of treatment recommended.

Factors Influencing Plant Improvements

Data presented elsewhere in this report support the decision to recommend construction of a plant giving complete treatment, that is a minimum of 85 per cent of the pollutional load, from a nominal average daily flow of 12 MGD and that this plant be laid out so that it may be easily expanded to a design capacity of 16 MGD. This will require completely new units for secondary treatment since none now exist. It will also require modifications, to be discussed later, to some of the existing primary units. For easy reference, the maximum capacities of the affected existing components are repeated:

Flow to plant — 36 MGD (Possibly 44)
Screen and grit tanks — 22.5 MGD
Primary settling tanks — 27.0 MGD
Flow meter — 20.0 MGD
Plant effluent sewer — 19.6 MGD

Summary of Recommended Improvements

It is proposed to retain those structures which can be used advantageously in the new plant as shown on Plate 12. The same structures with additional new units recommended are also shown on Plate 13. The new structures, later discussed in more detail, are summarized in the sub-paragraphs which follow.

1. Waste water treatment facilities: Addition to screen and grit structure, primary sludge pump house, meter, pump and blower building, aeration tanks, final settling tanks, chlorine contact chamber, plant effluent sewer.
2. Sludge handling facilities: Two sludge thickeners, three sludge digestion tanks, a sludge dewatering building utilizing centrifuges, and sludge beds.
3. Service buildings: An administration building and small addition to the garage.
4. Outside utilities: The necessary new plant sewers, water and electric lines, and storm drains.

Waste Water Treatment Facilities

The new raw sewage pumping station together with the present gravity sewer can deliver waste water to the screen and grit tanks at the rate of 30 or more MGD. The addition of a third screen and grit channel, giving a combined capacity of 33.75 MGD, is therefore recommended.

The present primary settling tanks with a maximum hydraulic capacity of 27 MGD are adequate for a design flow of 13.5 MGD for primary treatment. A lower detention period is preferable for settling followed by secondary treatment with the activated sludge process. It is recommonded that these structures be retained for the higher design flow of 12 MGD recommended for this program and for 16 MGD flow anticipated in future. This will require that flows in excess of 27 MGD by-pass these units and flow directly to the secondary treatment units. The future design flow of 16 MGD to the four primary tanks represents a unit loading of 1260 gallons per square foot per day (GSFD). When it is remembered that the records show that this plant removes 57 per cent BOD when loaded at 725 GSFD and that Clayton's primary tanks remove 43 per cent when loaded at 1570 GSFD, the assumed values of 25 per cent reduction in BOD when loaded at 1260 GSFD appear conservative.

It is recommended that modifications be made to the existing four primary tanks which will permit visual and automatic sludge and scum removal under one roof. The present sewage metering flume, now located in this area, is inadequate in size and should be increased to a three foot meter, relocated on the new primary effluent line.

It is recommended that the aeration tanks be constructed and arranged so that they can be operated in parallel as conventional modified aeration tanks or as controlled activated sludge utilizing the nitrified sludge interchange process. The same reasons apply to this plant as given for this selection at the Clayton Plant. The six one-pass tanks shown, each one hundred feet long, will provide a capacity of 12 MGD. Two future tanks, easily added, will increase this capacity to 16 MGD.

Three final settling tanks, each 40-feet by 125-feet, are provided for a hydraulic load of 12 MGD, or a unit settling rate of 800 GSFD. One future tank will increase the final settling capacity to 16 MGD.

A 50 by 100 foot channeled chlorine contact chamber will provide 30 minutes detention time at 16 MGD and 40 minutes detention at 12 MGD. It will support two housed 2000 pound chlorinators for pre-chlorination and post-chlorination and will support a roofed area for cylinder storage.

A new plant effluent sewer to the Chattahoochee River, paralleling the existing sewer, is necessary in order to keep the plant effluent out of Utoy Creek, whose flows at normal or below normal stages do not offer sufficient dilution. It is recommended that this relief sewer be 48-inch in size and have a full flow capacity of 45 MGD.

High water in Utoy Creek compels pumping sewage from primary treatment to secondary treatment. The aeration tanks require three blowers each driven by a 200 HP motor and capable of delivering 4000 cubic feet of air a minute against an 8-pound per square inch pressure for diffused air. Four blowers each driven by a 75 HP motor and delivering 2400 cubic feet per minute of air against 4 pounds per square inch pressure will be required for distributed air in the aeration tanks and for aerated channels. For efficient operation the sewage pumps, blowers, waste and activated sludge pumps and the necessary meters and controls will be placed in a building between the final settling tanks and aeration tanks.

Sludge Handling Facilities

After reserving an area on the site for future expansion of the plant, two tracts of about 10 acres each will be available and suitable for land fill. Approximately 8200 cubic yards of sludge cake will be produced per year which, if incinerated, would be reduced to 1300 cubic yards of ash per year, either of which must be disposed of. The area on the site will be ample for sludge cake production for about 15 years, after which time the cake must be hauled to a remote land fill, probably that serving the Clayton Plant. Incineration of sludge in the small quantities produced at Utoy will cost approximately $4.00 per cubic yard as compared with an incineration cost of approximately $1.00 per cubic yard in quantities such as that produced at Clayton. The high cost of incineration does not make incineration justified at Utoy Plant for the present program.

The waste activated sludge, estimated to have 1.2 per cent solids, should be thickened before delivery to the sludge digestion tanks. This can be done by returning the sludge to the primary settling tanks for thickening to about 4.5 per cent solids, or it can be thickened in flotation type thickeners to about 5 or 6 per cent solids. Flotation type thickeners have the advantage of removing fine sand and other heavy particles in the underflow, thus preserving digester space and almost eliminating the chore of frequent cleaning. As at Clayton Plant, this type thickener is recommended and will be provided with two tanks 16 feet by 82 feet long, covered to prevent freezing.

Three 80 ft. diameter sludge digestion tanks with a total volume of 360,000 cubic feet and a common head house will provide complete digestion for a population equivalent of 120,000. The construction of the fourth digester, easily added, would increase the total capacity to 160,000 population equivalent.

Mechanical means of dewatering the digested sludge preparatory to disposal is recommended over drying on sludge beds because less labor is required and because the performance of the mechanical thickeners is not affected by weather conditions, whereas the performance of the sludge beds is. Of the two mechanical dewatering processes now on the market, one utilizing vacuum filters will require elutriation tanks and approximately $17,000 worth of chemicals a year. The other process utilizing centrifuges is recommended because it is less expensive since no elutriation tanks are required and chemicals are seldom required. The sludge dewatering building will house two centrifuges, one being a spare, with provisions for the addition of a third. The centrifuges will discharge the cake to an inclined belt conveyor elevating it to loading points either for waiting trucks or for stock piling for later removal by front end loader and truck.

A sludge bed area of 30,000 square feet is provided for emergency use. This represents an area of .25 square feet per capita as compared to the unit area of 1.0 square feet per capita required when sludge beds are used as the sole means of dewatering.

Service Buildings

It is expected that a large part of the services and repairs will be done at the Clayton Water Pollution Control Plant. The services to be performed at Utoy would then be minimal. The administration building, single story and with about 3000 square feet of floor space, would be made up of administrative offices, laboratory, meeting room, utility, control, lunch and record rooms, toilet and shower facilities. Small additions to the present garage would permit the housing of trucks and mower equipment.

Outside Utilities and Structures

The smaller plant structures consist of a gated manhole which can by-pass the chlorine contact chamber, a gated structure to control flows in the two outfall lines, an adjustable overflow weir built integrally with the sewage pumping station to overflow excessive flows automatically, and a steel standpipe to maintain pressure on the effluent water line serving the aeration tank sprays and sludge thickeners.

Control of Operations

It is recommended that control valves be made both manual and automatic wherever advantageous to do so by reliable means. Operations involving the activated sludge process, sludge digestion thickening and dewatering are to be controlled from an operating console located in the pump and blower building. Those involving primary treatment are to be controlled at a console in the administration building. All functions needed for historical reasons, together with certain water quality parameters named in the succeeding paragraph, will be recorded in the administration building.

As aids to plant operation, it is recommended that instrumentation be provided to measure and record continuously or periodically the dissolved oxygen, pH, conductivity, temperature, turbidity and solids concentration at the points needed.

Estimated Project Costs

Estimated project costs for the 12 MGD plant are tabulated below.

Screen and grit structure	$ 36,200	
Additions to primary settling tanks	100,500	
Pump and blower building	438,700	
Aeration tanks	855,000	
Sludge thickeners	304,000	
Final settling tanks	357,500	
Chlorine contact chamber	110,200	
New sludge digestion tanks	615,400	
Sludge dewatering building	236,900	
Sludge beds	55,000	
Administration building	264,700	
Garage	13,800	
Wash water supply	59,400	
Miscellaneous outside work	497,200	
48-inch Outfall sewer	336,500	
Total construction costs		$4,281,000
Other costs:		
Administration	$ 50,000	
Engineering fees	224,000	
Resident engineer services	45,000	
Contingencies	200,000	
Total		$ 519,000
Total project cost		$4,800,000

Annual Costs

Annual costs include charges for debt service and the yearly cost of treatment plant operation and maintenance.

Annual financing costs for debt service are assumed to be similar to that now in use by the City of Atlanta for water works improvements, namely, 20-year revenue bonds for an estimated interest rate of 3½% obtainable in 1966.

Estimated costs for plant operation were obtained in general from information obtained in the preparation of this report or from experience elsewhere. The estimated costs of salaries and wages for operating personnel and other costs for plant operation compare most favorably with comparable plants in other cities. The total figure is for plant operation at full capacity. Initial operation is expected to be around 70% of the total.

Annual financing cost			
Debt service on $4,800,000 in 3½% bonds, 20-year			$ 337,900
Annual operating cost			
Power, 6 million kwh per year		$ 45,000	
Personnel services			
Superintendence	$ 18,600		
Operators	124,800		
Labor	39,600		
Total, personnel services		183,000	
Chlorine		12,600	
Operating supplies, other		12,000	
Maintenance and repairs		10,000	
Sludge disposal, hauling		2,000	
Total annual operating cost			$ 264,600
Total annual costs, debt service and operation			$ 602,500

Additional Project Costs for Plant Expansion

By the addition of certain units, the 12 MGD plant which has been generally described may be increased to 16 MGD capacity by the addition of the following units, whose estimated costs are as follows:

Aeration tanks	$ 285,000	
Final settling tanks	119,000	
Sludge thickeners	103,000	
Digesters	205,000	
Additional construction cost for 16 MGD plant		$ 712,000
Other project costs		138,000
Total expansion project cost		$ 850,000

PROPOSED IMPROVEMENTS

SANDY CREEK WATER POLLUTION CONTROL PLANT

Sewer and Force Mains from Bolton Road Pumping Station to the Sandy Creek Plant

Plate 14 shows the areas presently served by the Sandy Creek Plant and by the Proctor Creek sewer. The proposed sewer and related force main from the Bolton Road Pumping Station will initially serve only Area 2, but should be sized to carry wastes from Area 3 tributary to the Hollywood Road Pumping Station. Provision will be made for future installation of a force main under the proposed perimeter road to carry the wastes from the rest of Proctor Creek watershed, Area 4.

The costs of the proposed 36-inch sewer and related force main from the Bolton Road Pumping Station to the Sandy Creek Plant, of the culvert for installing a future force main under the perimeter road, and for the required modifications to the Bolton Road Pumping Station are included in the detailed cost estimate.

Factors Influencing Plant Improvements

Data presented elsewhere in this report support the decision to recommend construction of a plant giving at least 85 per cent treatment to a nominal average daily flow of 5 MGD, and that this plant be designed for ready expansion to a capacity of 10 MGD. It has been noted that possible future diversion of the wastes from the Proctor Creek drainage area, now tributary to the Clayton Plant, may require further expansion to a capacity in excess of 20 MGD.

The existing Sandy Creek Plant was constructed in 1956 for primary treatment of one million gallons of waste per day. Inasmuch as the existing facilities are limited to primary treatment and cannot be readily incorporated into a plant designed to give secondary treatment to five million gallons per day, and since the available land at the present plan site is not large enough to accommodate the future expansion which may be required, it is recommended that the existing primary treatment facilities be abandoned and a new plant constructed on the land near Fulton County Airport adjacent to the Chattahoochee River.

The elevation of the existing 30-inch Sandy Creek sewer is high enough to permit gravity flow through the proposed plant. The elevation of the plant effluent sewer will be above the estimated mean annual flood elevation of the river.

The modified activated sludge process, with provisions for utilizing the nitrified sludge interchange (Kraus) process, is considered to be the most suitable type of treatment for the Sandy Creek Plant for a number of reasons. The operating economy normally achieved with trickling filters in small plants is offset to a great degree by the fact that the elevation of the influent sewer will not permit gravity flow through a trickling filter plant and therefore the waste would have to be pumped to the filters. The possibility of nuisance due to flies also exists with the trickling filter process. As has been noted with regard to the Clayton and Utoy Plants, the excess wet weather flows resulting from infiltration and combined sewers give an advantage to an activated sludge process such as the proposed nitrified sludge interchange, which has a reserve of solids, over the standard activated sludge process.

Summary of Recommended Improvements

The layout of the proposed treatment plant is shown on Plate 15. The required facilities, later discussed in more detail, are summarized as follows:

1. Waste water treatment facilities: Screens, grit removal, primary settling tanks, aeration tanks, pump and blower building, final settling tanks and chlorine contact chamber.
2. Sludge handling facilities: Two sludge digestion tanks, sludge thickener, sludge beds.
3. Service building: An administration and control building will be provided.
4. Outside utilities: The necessary new plant sewers, water and electric lines, and storm drain.
5. Dike to elevation 770.

Waste Water Treatment Facilities

It is recommended that a mechanical screen be provided with a capacity of 13 MGD, with a second channel of equal capacity equipped with a manually cleaned bar screen for emergency use. Screenings will be removed mechanically and elevated to trucks for disposal on or near the plant site. The screens will be followed by an aerated grit chamber of 13 MGD capacity. The screen and grit facilities will be designed so that they may be readily duplicated for expansion of the plant to 10 MGD capacity.

Two settling basins each 40 feet wide and 78 feet long will provide the required 5 MGD capacity at a surface loading of 800 gallons per square foot per day. The settling tanks will be duplicated to provide the expansion to 10 MGD.

It is recommended that the aeration tanks be constructed and arranged so that they can be operated in parallel as conventional modified aeration or as controlled activated sludge utilizing the nitrified sludge interchange process. Three one-pass tanks each 83 feet long will provide the necessary 5 MGD capacity. Duplication of these tanks will suffice for expansion to 10 MGD.

The final settling tanks will be equal in size and capacity to the primary settling tanks.

The chlorine contact chamber will provide 15 minutes contact time at a peak flow of 10 MGD. It will support two 500 pound chlorinators for prechlorination and postchlorination and will support a roofed area for cylinder storage.

The aeration tanks will require three blowers each driven by a 90 HP motor and capable of delivering 1750 cubic feet of air per minute against an 8 pounds per square inch pressure for diffused air. One blower driven by a 60 HP motor and delivering 2000 cubic feet of air a minute against 4 pounds per square inch pressure will be required for distributed air in the aeration tanks. For efficient operation the sludge return pumps, blowers and waste sludge pumps and necessary meters and controls will be located in a building adjacent to the aeration tanks.

Sludge Handling Facilities

Sludge thickeners will be provided adjacent to the digesters. The major mechanical equipment associated with the thickeners will be housed in the digester head house.

Two digesters 70 feet in diameter will provide a capacity of 180,000 cubic feet which will be adequate for a population equivalent of 50,000 when using sludge drying beds for sludge disposal. The primary sludge pumps, sludge recirculation pumps and sludge heaters will be housed in the digester head house, which will be designed for future additions of two digesters. Space will be reserved adjacent to the digesters for future construction of a sludge centrifuge building.

Because of the relatively small size of the Sandy Creek Plant, sludge drying beds are the most economical means of sludge disposal. Dried sludge will be hauled to a remote land fill for disposal. A sludge bed area of 50,000 square feet will be required.

Service Buildings

The services to be performed at the Sandy Creek Plant would be minimal. The administration building, single story with about 1800 square feet of floor space, would be made up of an administrative office, laboratory, utility, control, lunch and record rooms, toilet and shower facilities.

Outside Utilities and Structures

Gated manholes will be provided to by-pass the secondary treatment facilities or the chlorine contact chamber.

Protective Dike

A dike to elevation 770 will be required to protect the secondary treatment facilities from high water in the Chattahoochee River.

Control of Operations

During periods of abnormally high river flow, it may be necessary to by-pass part or all of the treatment facilities. The by-pass gates will be designed to be operated manually or electrically.

As was proposed for the Clayton Plant and Utoy Plant, controls will be made automatic as well as manual wherever it is advantageous to do so by reliable means. Operations involving primary treatment and handling of sludge digestion will be controlled in the control building. Operations involving the control of the secondary treatment process will be controlled in the proposed pump and blower building.

As aids to plant operation, it is recommended that instrumentation be provided to measure and record continuously or periodically the dissolved oxygen, conductivity, temperature, turbidity and solids concentration at points needed.

Estimated Project Costs

Estimated project costs for the 5 MGD plant are tabulated below.

36" Sewer, force main	$ 657,000	
Modifications to Bolton Road Pumping Station	100,000	
Dike	120,000	
Screen and grit structure	80,000	
Primary settling tanks	210,000	
Aeration tanks	300,000	
Final settling tanks	210,000	
Chlorine contact tanks and chlorination equipment	30,000	
Digesters	400,000	
Sludge thickeners	120,000	
Sludge drying beds, 50,000 sq. ft.	90,000	
Blower and pump building	280,000	
Control building	60,000	
Meters and automation	40,000	
Grading, outside piping and other work	260,000	
Total construction cost		$2,957,000
Other costs:		
Administration	$ 38,000	
Engineering fees	160,000	
Resident engineer services	35,000	
Contingencies	150,000	
Total		$ 383,000
Total project costs		$3,340,000

Annual Costs

Annual costs include charges for debt service and the yearly cost of treatment plant operation and maintenance.

Annual financing costs for debt service are assumed to be similar to that now in use by the City of Atlanta for water works improvements, namely, 20-year revenue bonds for an estimated interest rate of 3½% obtainable in 1966.

Estimated annual costs for plant operation were obtained in general from information obtained in the preparation of this report or from experience elsewhere. The estimated costs of salaries and wages for operating personnel and other costs for plant operation compare most favorably with comparable plants in other cities. The total figure is for plant operation at full capacity. Initial operation is expected to be around 70% of the total.

Annual financing cost			
Debt service on $3,340,000 in 3½% bonds, 20-year			$ 235,100
Annual operating cost			
Power, 2.6 million kwh per year		$ 26,000	
Personnel services			
Superintendence	$ 8,400		
Operators	41,000		
Labor	10,600		
Total, personnel services		60,000	
Chlorine		5,000	
Operating supplies		5,000	
Maintenance and repairs		5,000	
Sludge disposal, hauling		900	
Total annual operating cost			$ 101,900
Total annual costs, debt service and operation			$ 337,000

Project Costs for Plant Expansion

Plant expansion from 5 MGD to 10 MGD will not involve duplication of the 36-inch sewer, force main, pumping station, dike or plant control building, but will involve duplication of the balance of the principal features of the 5 MGD plant proposed for this project. For the same economic conditions and construction costs as at present, the next expansion program would cost approximately $2,400,000 for the total project.

PROPOSED CONSTRUCTION SCHEDULE

A schedule of construction work is shown graphically on Plate 16 and described below. Plate 16 is intended to show the amount of funds required to cover total project costs during the construction period and to show the time duration covered by each contract. Other costs for administration, engineering fees, resident engineer services and contingencies have been added to construction costs to obtain the total relative project cost applicable to each contract and are listed separately in the description.

The schedule for Clayton Plant has been drawn up to complete and place facilities in operation in order of need, namely, sludge disposal, primary settling, and secondary treatment. It is recognized that the work area is somewhat congested and that mutual interference between Contractors prosecuting certain contracts simultaneously may result. The schedule reflects an attempt to minimize this interference.

Construction contracts are numbered and shown as shaded blocks on Plate 16. These are considered practical minimum contracts and if one or more are bid concurrently, they may be combined into one contract.

R. M. Clayton Water Pollution Control Plant	Construction Cost	Project Cost
Contract 1. Overflow and emergency by-pass; storm water culvert; sewage conduits, tunnel under Marietta Boulevard; secondary treatment by-pass and plant effluent; all site excavation and dikes; structural excavation and pile foundation on the west side of Marietta Blvd.; Proctor and Nancy trunk sewer relocation; land.	$ 2,230,000	$ 2,867,000
Contract 2. Modifications of existing sludge digestion tanks; sludge dewatering building; incinerators; pipe tunnels; outside piping and electrical work necessary to permit dewatering and incinerating partially digested sludge.	2,350,000	2,630,000
Contract 3. Overflow and by-pass structure; screen and grit structure; addition to primary settling tanks; outside work.	2,060,000	2,330,000
Contract 4. Sludge thickeners; new sludge digestion tanks; outside work.	3,630,000	4,080,000
Contract 5. Administration building; shop and warehouse; gas holder; wash water supply.	1,750,000	1,980,000
Contract 6. All remaining work on east side of Marietta Boulevard.	200,000	225,000
Contract 7. Structure between final settling tanks and aeration tanks, including pumps, blowers and piping.	6,200,000	6,990,000
Contract 8. Final settling tanks; chlorine contact chamber; outside piping and electrical.	4,335,000	4,872,000
Contract 9. Aeration tanks; outside piping.	5,700,000	6,440,000
Contract 10. All remaining work on west side of Marietta Boulevard.	345,000	386,000
Total, Clayton Plant	$28,800,000	$32,800,000
Sandy Creek Water Pollution Control Plant		
Contract 11. All work at plant.	$ 2,200,000	$ 2,490,000
Contract 12. All sewer work and force main.	657,000	737,000
Contract 13. Modifications to sewage pumping station.	100,000	113,000
Total, Sandy Creek Plant	$ 2,957,000	$ 3,340,000
Utoy Creek Water Pollution Control Plant		
Contract 14. All work at plant.	$ 4,281,000	$ 4,800,000
Total, Utoy Creek Plant	$ 4,281,000	$ 4,800,000
Grand Total	$36,038,000	$40,940,000

Project costs are based on current contract prices with a reasonable near term allowance for contingencies. If the construction field becomes glutted with too many urban projects being bid at the same time, contract prices could easily reach levels which would make financing difficult, and possibly nullify the benefits obtained through Federal aid.

GEORGIA
PROFESSIONAL
REGISTERED
No. 1282
ENGINEER
C. E. DRUMMOND, JR.

Respectfully submitted,

WIEDEMAN AND SINGLETON

C. E. Drummond, Jr.

C. E. Drummond, Jr.
John W. Cameron

APPENDIX "A"

STUDIES OF POPULATION, POLLUTION, RIVER QUALITY AND FLOW

Estimates of Population and Tributary Population Equivalents in the Chattahoochee Watershed in Metropolitan Area

The estimated populations within the metropolitan area which are tributary to the Chattahoochee River are given below in Table A-1, broken down into those areas above the Clayton Plant (Fulton, DeKalb, Cobb and Gwinnett Counties), the area served by the Clayton Plant (Fulton and DeKalb Counties) and areas below the Clayton Plant (Fulton, Cobb and Douglas Counties), along with the estimated population equivalents tributary to the river. These estimates are used in later determinations of future treatment requirements of water pollution control plants discharging to the Chattahoochee River.

TABLE A-1

ESTIMATED FUTURE POPULATIONS AND
POPULATION EQUIVALENTS TRIBUTARY TO CHATTAHOOCHEE RIVER

	Present		1985		2000	
	Population	Tributary population equivalent	Population	Tributary population equivalent	Population	Tributary population equivalent
Above Clayton Plant	73,200	35,500	170,000	115,000	315,000	180,000
Clayton Plant	445,000	770,000	619,000	1,250,000	686,000	1,500,000
Below Clayton Plant	220,000	110,000	467,000	467,000	751,500	751,500
TOTAL	738,200	915,500	1,258,000	1,832,000	1,752,500	2,431,500

The above Table A-1 is based on Tables A-2, 3, 4 and 5, which were developed from the population projection of the five county metropolitan area made by the Metropolitan Planning Commission.

TABLE A-2

METROPOLITAN AREA POPULATION PROJECTION BY COUNTIES

	Estimated Population		
County	Present	1985	2000
Clayton	68,500	192,000	324,000
Cobb	149,000	384,000	639,000
DeKalb[1]	317,100	572,000	765,000
Fulton	596,000	830,000	1,092,000
Gwinnett	52,000	108,000	205,400
Total[2]	1,182,600	2,086,000	3,025,400

TABLE A-3

DEKALB COUNTY POPULATION PROJECTION — BREAKDOWN OF AREAS
TRIBUTARY TO CLAYTON PLANT

	Estimated Population		
	Present	1985	2000
Population in DeKalb Tributary to Clayton Plant			
Not in Atlanta	147,900	280,000	321,000
In Atlanta	12,000	12,000	12,000
Total DeKalb Population Tributary to Clayton Plant	159,900	292,000	333,000
Population in DeKalb Not Tributary to Clayton Plant	157,200	280,000	432,000
Total DeKalb Population	317,100	572,000	765,000

TABLE A-4

R. M. CLAYTON WATER POLLUTION CONTROL PLANT
POPULATION PROJECTION BY AREAS

	Area, Acres	Estimated Population		
		Present	1985	2000
Atlanta				
Fulton County				
Peachtree Creek	19,387	144,500	156,000	169,000
Nancy and Long Island Creek	8,386	18,000	31,000	39,000
Proctor Creek	10,225	108,500	110,000	110,000
DeKalb County (Peachtree Creek)	1,522	12,000	12,000	12,000
Total Atlanta	39,520	283,000	309,000	330,000
DeKalb County (Not Including Atlanta)				
Peachtree Creek	37,678	122,000	231,000	255,700
Nancy Creek	11,580	25,900	49,000	65,300
Total DeKalb	49,258	147,900	280,000	321,000
Unincorporated Fulton County				
Nancy Creek	4,198	8,200	14,600	17,000
Long Island Creek	4,459	6,000	15,400	18,000
Total Unincorporated Fulton County	8,652	14,200	30,000	35,000
Total Population Tributary to R. M. Clayton W.P.C. Plant	97,430	445,100	619,000	686,000

TABLE A-5

UTOY CREEK WATER POLLUTION CONTROL PLANT
POPULATION PROJECTION BY AREAS

	Area, Acres	Estimated Population		
		Present	1985	2000
Atlanta	11,420	48,500	69,000	78,000
East Point	2,480	15,600	17,400	18,400
Unincorporated Fulton County	6,778	3,550	19,400	26,600
Total	20,078	67,650	105,800	123,000

TABLE B-6

ATLANTA POPULATION PROJECTION

	Estimated Population		
	Present	1985	2000
Fulton County	464,000	550,000	601,000
DeKalb County	44,000	45,000	45,000
Total	508,000	595,000	646,000

Estimates of Future Diversion of Water from the Chattahoochee River Basin

The quantity of water which is available for dilution of the Clayton Plant wastes is significantly reduced by the diversion of water from the river for use in other watersheds. The U. S. Study Commission on Southeast River Basins has estimated the quantity of water diverted from the Chattahoochee watershed to be 208 CFS in the year 2000, which estimate is apparently based on the assumption that all of the water used in the Atlanta area will come from the Chattahoochee River watershed. At present, Cobb County is constructing a water intake on Lake Allatoona in the Little River watershed and it appears that in the future, Cobb County may be diverting water into the Chattahoochee River basin. Clayton County is presently using water from Cotton Indian Creek outside of the Chattahoochee watershed. The future diversion from the Chattahoochee watershed has been estimated based on future population estimates and continued developments of water sources outside of the Chattahoochee River basin. It is assumed that Cobb County withdrawal from the Chattahoochee River will be equal to waste discharges, and that one-third of Clayton County will be served by water from the Chattahoochee watershed. The estimated future population outside of the Chattahoochee River basin which will be served by Chattahoochee River is as follows:

TABLE A-7

ESTIMATED FUTURE POPULATION OF AREAS NOT IN CHATTAHOOCHEE WATERSHED SERVED BY CHATTAHOOCHEE RIVER WATER

	1985	2000
Clayton	64,000	108,000
DeKalb	275,000	418,000
Fulton	214,000	270,000
Gwinnett	83,000	163,000
	636,000	959,000

The water consumption in areas outside of the Chattahoochee watershed is expected to be somewhat less than the average in the metropolitan area. Assuming an average water consumption of 100 gallons per capita per day, the quantity of water diverted from the Chattahoochee River in 1985 would be approximately 100 cubic feet per second (CFS), and by the year 2000, approximately 150 CFS.

Estimated Future Withdrawals from the Chattahoochee River

The estimated future withdrawals from the Chattahoochee River are as follows:

TABLE A-8

ESTIMATED FUTURE WITHDRAWALS FROM THE CHATTAHOOCHEE RIVER, CFS

	1985	2000
Atlanta Water Works	181	227
Cobb County Water Works*	45	70
DeKalb County Water Works*	95	135
East Point Water Works	17	21
Gwinnett County Water Works*	17	31
Total	355	484

*Based on population estimate only.

Estimated Future Sewage Inflow to the Chattahoochee River

The wastes returned to the Chattahoochee River will be approximately equal to the water withdrawn, Table A-8 above, less the quantity diverted from the watershed. The estimated future waste inflows to the river are given below, divided into the wastes entering the river above the Clayton Plant, wastes from Clayton Plant, and wastes entering below the Clayton Plant.

TABLE A-9

ESTIMATED FUTURE WASTE INFLOW TO THE CHATTAHOOCHEE RIVER, CFS

	1985	2000
Above Clayton Plant	18	28
From Clayton Plant	155	185
Below Clayton Plant	82	121
	255	334

Minimum Discharge by Buford Dam and Morgan Falls Dam

The minimum river discharge at Atlanta is determined primarily by the discharges from Buford Dam and secondarily by reregulation of the river by Morgan Falls Dam. The releases from Buford Dam are required by law to be sufficient to maintain 650 CFS at Atlanta, presumably at the USGS gage at Atlanta. Prior to the completion of Buford Dam, statements by Corps of Engineers officials and charts issued by the Corps of Engineers showing estimated release patterns during low water periods indicated the intent to provide a minimum average weekly flow of 1600 CFS. On the basis of these statements, the City of Atlanta entered into an agreement with the Georgia Power Company to develop reregulation facilities at Morgan Falls Dam in order that the low week end river discharges could be increased. Plate A-1, Inflow Discharge

Hydrograph of Morgan Falls Dam, shows the minimum release pattern which can be maintained by Morgan Falls Dam if releases from Buford Dam are made in accordance with the aforementioned charts issued by the Corps of Engineers. Plate A-1 shows the following minimum discharges:

Saturday	1150 CFS
Sunday	1000 CFS
Monday	1340 CFS
Average Week	1600 CFS

Inflow Below Buford Dam

The inflow duration data for the area between the USGS gage at Buford and the USGS gage at Whitesburg, 41 miles below the Clayton Plant, developed from flow duration curves of the river at the two gages, are as follows:

TABLE A-10

INFLOW DURATION DATA BETWEEN BUFORD AND WHITESBURG USGS GAGES

Per cent of time inflow was equaled or exceeded	Inflow, CFS per square mile
50	1.00
80	0.39
90	0.28
95	0.23
99	0.20

Diversions from the watershed have not been taken into account. The actual inflow would therefore be somewhat higher than the above values, particularly at low flows. The data from which the above inflow duration table was determined were obtained prior to the construction of the Morgan Falls reregulation facilities.

The drainage areas of the Chattahoochee River at points of interest are as follows:

Location	Miles from Clayton	Drainage Area Square Miles
USGS Gage at Buford	44	1060
USGS Gage at Atlanta	2.6	1450
Clayton Plant	0	1600
USGS Gage at Whitesburg	41	2430

In estimating the probable dry weather inflow below Buford Dam, an inflow of 0.25 CFS per square mile has been assumed, which inflow is equaled or exceeded approximately 95 per cent of the time.

Estimated Future Minimum River Discharges

The USGS gage at Atlanta has been used as a point of reference. The changes in river discharge resulting from withdrawals and stream inflow between Buford Dam and the USGS gage at Atlanta have been determined from the foregoing estimates as follows:

TABLE A-11

CHANGE IN RIVER DISCHARGE BETWEEN BUFORD DAM AND ATLANTA USGS GAGE

	Change in discharge CFS	
	1985	2000
Inflow, 400 square miles at .25 CFS per square mile	100	100
Withdrawals (by Gwinnett, DeKalb and Cobb Counties)	—157	—236
Sewage inflow	18	28
Net change in river flow	— 39	—108

Assuming a minimum average weekly release at 1600 CFS, the minimum average weekly flow available at the USGS gage at Atlanta would therefore be 1560 CFS in 1985, and 1492 CFS in the year 2000. The minimum weekday (Monday) discharge after reregulation by Morgan Falls would be 1300 CFS in 1985 and 1230 CFS in the year 2000.

When the minimum release from Morgan Falls Dam is considered, the withdrawals above Morgan Falls Dam by DeKalb County and Gwinnett County may be disregarded. The river discharge at the USGS gage at Atlanta, when 750 CFS is released from Morgan Falls Dam, is estimated to be 725 CFS in 1985 and 700 CFS in the year 2000, based on the estimated future withdrawal by Cobb County and estimated inflows.

In the calculations regarding allowable BOD concentrations and bacterial quality in the following pages, the values of 700, 1200 and 1500 CFS have been used, which values represent the approximate minimum flow, the minimum weekday flow and the minimum average weekly river flow at the Clayton Plant.

River Velocity

The river velocities below the Clayton Plant are assumed to be approximately the same as the velocities at the Whitesburg and Atlanta (Vinings) USGS gages for the range of flows under consideration.

Measurements taken by the USGS at the Whitesburg and Atlanta (Vinings) gages are shown in Table A-12. The mean velocities at these gages at various river discharges are represented in Plate A-2. The curve drawn from the plotted data represents the assumed mean velocities of the river below the Clayton Plant.

TABLE A-12

USGS MEASUREMENTS AT WHITESBURG AND ATLANTA GAGES

Date	Gage	Mean Flows CFS	Mean Valocity Ft./Sec.	Maximum Velocity Ft./Sec.
9/15/54	Whitesburg	460	.65	1.27
6/23/54	Whitesburg	1988	1.63	2.16
5/12/54	Whitesburg	2550	1.82	2.42
10/18/53	Whitesburg	1040	1.04	1.38
9/8/53	Whitesburg	1650	1.38	1.83
11/17/52	Whitesburg	1180	1.31	1.86
2/18/54	Whitesburg	3461	2.18	3.00
10/6/52	Whitesburg	908	1.13	1.65
8/20/52	Whitesburg	1540	1.40	2.01
9/6/50	Whitesburg	1810	1.57	2.35
10/7/51	Whitesburg	612	.81	1.36
5/30/61	Atlanta	1100	1.19	1.76
1/31/61	Atlanta	2750	2.13	2.92
8/31/61	Atlanta	1030	1.10	1.74
9/2/59	Atlanta	763	0.90	1.49
9/30/59	Atlanta	740	0.89	1.40
6/30/58	Atlanta	515	.72	1.25

Depth of Flow Versus River Discharge

The mean depths of flow in the river at various flow rates at Highway 92, 19 miles below Clayton, as determined from USGS measurements are as follows:

TABLE A-13

RIVER DEPTH VERSUS DISCHARGE

River Discharge CFS	Mean Depth Feet
650	3.00
1000	3.58
2000	5.00
3000	6.40

The velocity at Highway 92 is approximately the same as at the USGS gages at Atlanta and Whitesburg.

The above flow depths are considered to be representative of the river below the Clayton Plant and are used in later determinations of the reaeration rate of the river.

River Temperature at the Clayton Plant

River water temperatures at Atlanta have been substantially reduced since construction of Buford Dam due to the low temperature of the water drawn from the bottom of the reservoir. Plate A-3 shows the average of the mean monthly temperatures at the Atlanta Water Works in 1961 and 1962 as compared to the temperatures at that point prior to the construction of Buford Dam.

The record of water temperature at the Atlanta Water Works for the month of July, 1962, illustrates the effect of Buford Dam on water temperature. During the first two weeks of that month river flows at Buford USGS gage averaged 1500 CFS and the water temperature at the water works averaged 64° F. (18° C.). During the latter two weeks' period Buford flows averaged only 900 CFS and the average temperature at the water works was 71° F. (22° C.). Mean air temperature during both of these periods was the same, 79° F. (26° C.). Table A-14 shows mean daily temperatures at the Atlanta Water Works intake and mean daily flows at Buford and Atlanta USGS gages for the month of July, 1962.

The effect of low week end releases from Buford Dam on the river temperature at Atlanta can also be seen in the record for the month of July, 1962 shown in Table A-14. Saturday and Sunday flows at Buford and the Monday and Tuesday river temperature at Atlanta have been underlined in Table A-14 (at low flows, the time of travel of water from Buford Dam to the Atlanta Water Works is approximately two days) to show the increase in water temperature at Atlanta due to low Buford releases. The average Monday and Tuesday temperature for the first four weeks of July, 1962 was 70° F. (21° C.) compared to an average temperature of 68° F. (20° C.) for the four-week period.

TABLE A-14

EFFECT OF RELEASES BY BUFORD DAM ON CHATTAHOOCHEE RIVER TEMPERATURE IN ATLANTA

(MEAN MONTHLY AIR TEMPERATURE 70° F.)

Date	River Temperature at Atlanta Water Works Intake, ° F.	River Discharge at Buford USGS Gage, CFS	River Discharge at Atlanta USGS Gage, (Vinings) CFS
June 30, '62		428	
July 1, '62	62	410	1080
2	67	1930	1250
3	68	1960	1830
4	63	1970	2270
5	62	1950	2450
6	65	2030	4700
7	64	463	1980
8	64	428	1300
9	71	1900	1620
10	69	1900	2120
11	65	1920	1880
12	63	1940	2510
13	63	1940	2150
14	65	615	1220
15	67	418	810
16	67	1040	990
17	73	1080	1100
18	74	1070	1280
19	72	1030	1210
20	71	1050	1180
21	72	418	1040
22	72	379	815
23	73	1060	995
24	75	1050	1100
25	74	1060	1230
26	69	1060	1650
27	68	1040	1130
28	69	1010	1030
29	67	1020	1020
30	66	2890	2450
31	63	2710	3400

Daily fluctuations in temperature show the effects of regulation by Buford Dam and reregulation by Morgan Falls. Table A-15 shows the typical pattern of daily temperature fluctuation caused by the varying discharge from Morgan Falls Dam. The temperature variation is generally less than 6° F. (3.3° C.) with the high temperature occurring during the night when the river discharge is low.

TABLE A-15
TYPICAL PATTERN OF DAILY TEMPERATURE FLUCTUATIONS OF CHATTAHOOCHEE RIVER AT ATLANTA WATER WORKS

Date — May 3, 1963

Time	Temperature, ° F.
12 M.N.	55
2 A.M.	55
4 A.M.	54
6 A.M.	53
8 A.M.	52
10 A.M.	52
12 Noon	51
2 P.M.	52
4 P.M.	54
6 P.M.	54
8 P.M.	55
10 P.M.	55

The mean monthly river temperatures at the water works during 1961 and 1962 were 18° C. (64° F.) or less except for July of 1962 which had an average temperature of 20° due to abnormally low releases from Buford Dam. It is therefore assumed that the maximum mean monthly river temperature at the Clayton Plant will be 19° C. or less in the future, with maximum average Monday-Tuesday temperatures of 20° C. (68° F.). The daily temperature fluctuations of temperature, with low temperatures occurring during the time of maximum sewage discharge, give a slight margin of safety to the above estimates of future river temperatures.

Effect of Stream-Electric Generating Plants on River Temperature

Less than two miles downstream from the Clayton Plant are located two steam-electric generating plants, Plants Atkinson and McDonough, which use river water as cooling water in the condensers, thereby raising the river temperature and reducing the capacity of the river to assimilate wastes. The degree of temperature rise caused by the steam plants depends on the river discharge and the amount of power being produced by the generating plants.

Georgia Power Company (3) has estimated that when operating at 100 per cent capacity Plant Atkinson discharges 1,910,000 pounds of steam per hour and Plant McDonough discharges 2,342,000 pounds of steam per hour to the condensers. The heat load to the river, assuming that approximately 950 BTU must be removed from each pound of exhaust steam, is therefore 504,000 BTU per second from Plant Atkinson and 618,000 BTU per second from Plant McDonough.

The temperature rise due to operation of Plants Atkinson and McDonough at 100 per cent capacity is shown in Plate A-4 for flows from 700 to 2600 CFS.

Estimated Future River Temperature Below the Atkinson and McDonough Steam Plants

The Atkinson and McDonough Steam Generating Plants may be expected to operate at between 40 and 100 per cent of plant capacity. Should a low flow of 650 CFS coincide with the operation of the steam plants at maximum capacity, a temperature rise of almost 16° C. (28° F.) could occur. It is probable that average daily temperatures as high as 34° C. (84° F.) may occur on Mondays when river flows are low. Temperatures significantly in excess of 30° C. are not expected, for even though the operation of the steam plants may increase the temperature above 30° C., such temperatures will not endure for long as the river will lose heat by radiation and evaporation, and the water temperature will be reduced by the inflow from tributary streams.

If an average minimum weekly release of 1600 CFS is maintained by Buford Dam, the maximum average temperature increase due to the steam plants would be approximately 70° C. (13° F.) and the maximum average monthly temperature which would be expected would be approximately 26° C. (79° F.). The probable maximum Monday temperature is expected to be approximately 28° C. (82° F.).

References:

(1) "Population Report", Department of Planning, DeKalb County, Georgia, (May, 1963).

(2) "Atlanta Silhouettes", Population and Economy Report Number One, Atlanta Region Metropolitan Planning Commission, (January, 1962).

(3) R. S. Albright, "The Effect of Steam-Electric Generating Plant Operations on Downstream River Water Temperature", Paper presented at the 30th Annual Georgia Water and Sewage Short School, Georgia Institute of Technology, September 6, 1961.

APPENDIX "B"

ESTIMATE OF FUTURE BOD REMOVALS REQUIRED AT THE CLAYTON PLANT FOR VARIOUS RIVER FLOWS AND TEMPERATURES

Considerable information has been gathered over a period of years by City, State and Federal agencies as regards dissolved oxygen in the Chattahoochee River in relation to the pollutional load from the Clayton Plant.

Because of the diurnal variations in the river temperature and river discharge it is difficult to analyze existing data. Therefore, the problem of determining the pollutional load which the Chattahoochee River can carry has been approached from a theoretical standpoint.

The biochemical oxygen demand of the sewage discharged to the Chattahoochee should be no greater than can be satisfied without excessively depleting the dissolved oxygen available in the diluting water. The State of Georgia has not yet established minimum DO requirements. In some other states 4.0 PPM minimum DO is specified as the desired objective. A minimum allowable DO of 4.0 PPM has been assumed in estimating the allowable BOD load on the river.

The pollutional load which can be discharged by the Clayton Plant without reducing the dissolved oxygen in the river to less than 4.0 PPM is affected by many factors, including river velocities, aeration rates (the rate of which oxygen dissolves in the river), the initial oxygen deficit and initial BOD of the river, pollution from other sources, river discharge and river temperature. These factors have been analyzed in order to estimate the degree of BOD removal which must be maintained at the Clayton Plant at various river flows and temperatures.

Determination of Future Allowable Organic Load in the Chattahoochee River

The quantity of organic matter, in terms of biochemical oxygen demand, which can be carried by the river without excessively depleting the dissolved oxygen has been estimated in the following paragraphs using the Streeter Phelps Formulas. Inasmuch as 85 per cent BOD reduction has been stipulated by the Georgia Water Quality Control Board for the Clayton Plant, it is reasonable to assume that all wastes discharged to the river will be given comparable treatment and therefore there would be no significant suspended solids (Benthal) load in the river. The quantity of organic matter which may be discharged to the river, assuming no Benthal load, may therefore be estimated from the following formulas:

$$t_c = \frac{1}{k(f-1)} \log_e \Big\} f \left(1 - (f-1)\frac{D_a}{L_a}\right) \Big\{$$

$$D = L_a e^{-kt_c}/f + D_a e^{-rt_c}$$

$$Y_5 = L_o(1 - e^{-k_o 5})$$

$$L_a = L_o e^{C_L (T - T_o)}$$

$$k = k_o e^{C_k (T - T_o)}$$

$$r = r_o e^{C_r (T - T_o)}$$

in which

t_c = time of critical oxygen deficit, days
k = de-oxygenation constant
r = reaeration constant
f = self purification constant = r/k
D = critical oxygen deficit
D_a = initial oxygen deficit
L_a = first stage BOD at point of discharge of waste at temperature T
L_o = first stage BOD at 20°C.
T_o = reference temperature = 20°C.
T = temperature, °C.
Y_5 = 5 day BOD @ point of discharge of waste at 20°C.
C_L = temperature characteristic of 1st stage BOD.
k_o = deoxygenation constant 20°C.
C_k = temperature characteristic of deoxygenation constant
r_o = reaeration rate at 20°C.
C_r = temperature characteristic of the reaeration constant

The quantity of oxygen which will dissolve in water varies with temperature. If a minimum of 4.0 PPM DO is to be maintained in the river, the allowable oxygen deficits at 20°, 25°, 30° and 35° C. are as follows:

TABLE B-1

ALLOWABLE OXYGEN DEFICIT

Temperature ° C.	Saturation DO, PPM	Allowable oxygen deficit D (saturation DO - 4.0 PPM)
20	9.2	5.2
25	8.4	4.4
30	7.6	3.6
35	6.9	2.9

The value of 0.020 per ° C. for the temperature characteristic of the first stage BOD and 0.018 per ° C. for the temperature characteristic of the reaeration rate have been assumed for use in the following paragraphs. The time of critical ogygen deficit, t_c, and the quantity of 5 day 20° C. BOD which may be discharged for the river, assuming a minimum allowable dissolved oxygen level of 4.0 PPM, are determined thereafter.

REAERATION RATES

Theoretical Reaeration Rates

A general approximate formula for the reaeration of natural rivers[1] is given by the following equation:

$$r = \frac{24(D_L V)^{1/2}}{H^{3/2}}$$

in which:

$r =$ reaeration coefficient base e
$D_L =$ diffusivity of oxygen in water
$= 0.000081$ ft²/hr. at 20° C.
$V =$ velocity of flow in feet per hour.
$H =$ depth of flow, ft.

A second recently proposed[2] approximation for the reaeration coefficient is given by the equation:

$$r = \frac{11.5V}{H^{5/3}}$$

in which:

$V =$ velocity in feet per second (FPS)
$H =$ depth in ft.

The mean velocities and mean depths of flow in the Chattahoochee River for discharges of 700, 1200, 1500 and 2500 CFS are given in the following table, together with the reaeration constants determined by both of the above equations.

TABLE B-2

THEORETICAL REAERATION RATES, PER DAY

River Flow CFS	Mean Depth, Feet	Mean Velocity, FPS	$r = \frac{24(D_L V)^{1/2}}{H^{3/2}}$	$r = \frac{11.5V}{H^{5/3}}$
700	3.1	0.88	2.23	1.54
1200	3.9	1.24	1.85	1.47
1500	4.3	1.40	1.72	1.41
2500	5.7	1.78	1.27	1.12

The former of the above equations has been used by the USPHS for estimating allowable organic loads in streams.

A third method of approximating reaeration rates[3] is by use of the commonly accepted values of the stream purification constant f, which equals r/k. The magnitude of f at 20° C. for "large streams of moderate velocity", which would closely describe the Chattahoochee River, is 2.0 to 3.0, which would indicate a reaeration rate of 0.46 to 0.69 at 20° C.

Observed Conditions in the Chattahoochee River

During the months of July and August, 1965, considerable data was taken by the USPHS on river conditions below the Clayton Plant. The weighted averages of the measured BOD and DO of the river at points downstream from Atlanta for a period of six consecutive days (July 12-17), have been used to estimate the reaeration coefficient of the river. The weighted averages at points downstream from the Clayton Plant during this period are shown below in Table B-3.

TABLE B-3

OBSERVED CONDITIONS BELOW CLAYTON PLANT JULY 12-17, 1965 (WEIGHTED AVERAGE)

Station	HWY I-75	HWY 139	HWY 92	HWY 27
Miles from Clayton Plant	-2 (above)	6 (below)	19 (below)	41 (below)
River Temperature, ° C.	19.3	25.4	23.6	24.9
River Flow, CFS	2095	2175 (Est.)	2330	2790
DO, PPM	10.4	4.6	4.0	4.0
DO, #/day	109,100	53,500	49,600	59,800
BOD, PPM	4.0	10.1	8.0	5.6
BOD, #/day	44,600	115,500	99,500	83,900
DO deficit, PPM	0	3.4	4.7	4.4
DO deficit, #/day	0	40,000	59,600	66,600

The quantities of dissolved oxygen and BOD at Highway 139, 6 miles below Clayton Plant, and Highway 27, 41 miles below Clayton Plant, will be used to estimate the reaeration rate. Stream inflow to the Chattahoochee is assumed to have a BOD of 1.0 PPM and DO of 7 PPM. The river velocity at the average flow of 2480 CFS is 1.77 feet per second, and the time of travel of the water between the two points approximately 1.2 days. It has been assumed that the quantity of BOD being discharged by other water pollution control plants, estimated to be about 7000 #/day enters the river below Highway 139. Half of the BOD entering the river from stream flow between the two points is assumed to enter immediately below Highway 139 and the remaining BOD assumed to enter immediately above Highway 27. The average river temperature is assumed to be 25° C. The reaeration rate is therefore estimated as follows:

BOD Highway 139 (5 day 20° C.)		115,500 #/day
BOD entering river immediately below Highway 139		
	sewage	+7,000 #/day
	inflow	+1,600 #/day
Y_0=Initial BOD (5 day 20° C.), time 0		124,100 #/day
BOD Highway 27 (5 day 20° C.), time 1.2 days		83,900 #/day
BOD entering river immediately above Highway 27		—1,600 #/day
$Y_{1.2}$=Final BOD (5 day 20° C.), time 1.2 days		82,300 #/day

Using the aforementioned Streeter-Phelps equations, the first stage BOD indicated at Highway 139, adjusted to 25° C. is

$$L_a \text{ (Hwy. 139)} = \frac{124{,}100 \text{ \#/day}}{(1-e^{-k20\times5})} e^{0.020\times5} \qquad (1)$$

Similarly, the first stage BOD remaining at Highway 27, adjusted to 25° C. is

$$(L_{1.2}) \text{ (Hwy. 27)} = \frac{82{,}300 \text{ \#/day}}{(1-e^{-k20\times5})} e^{0.020\times5} \qquad (2)$$

$$\text{BOD exerted} = \frac{(124{,}100 \text{ \#/day} - 82{,}300 \text{ \#/day}}{(1-e^{-k20\times5})} e^{0.020\times5} \qquad (3)$$

The BOD exerted between the two points may also be expressed in terms of the initial first stage BOD and the elapsed time, 1.2 days, as follows:

$$\text{BOD exerted} = 124{,}100 \text{ \#/day } \frac{e^{0.020\times5}(1-e^{-k25\times1.2})}{(1-e^{-k20\times5})} \qquad (4)$$

Equating (3) and (4)

$$124{,}000 \text{ \#/day } e^{0.020\times5} \frac{(1-e^{-k25\times1.2})}{(1-e^{-k20\times5})} = \frac{41{,}800 \text{ \#/day } e^{0.020\times5}}{(1-e^{-k20\times5})}$$

$$e^{-1.2\ k25} = .663$$

$$k_{25} = .34 \text{ per day}$$

The BOD exerted between the two points, from equation (4) is 64,500 #/day.

The change in the dissolved oxygen content of the river between the two points is:

DO Highway 139	53,500 #/day
+DO influent: 615 CFS @ 7 PPM	23,000 #/day
—DO Highway 27	59,800 #/day

=Decrease in DO in water from Highway 139 to Highway 27 of 16,700 #/day. The dissolved oxygen entering the river between the two points=BOD exterted, 64,500 #day, less the decrease in DO in the water, 16,700 #/day,=47,800 #/day. The weighted average DO deficit is 57,600 #/day. The reaeration constant is therefore

$$r = \frac{47{,}800\ \#/\mathrm{day}/1.2\ \mathrm{days}}{57{,}600\ \#/\mathrm{day}} = 0.70 \text{ per day at } 25^\circ\mathrm{C.},$$

or 0.64 per day at 20° C. using the assumed temperature characteristics of 0.018 per ° C.

Comparison of Theoretical Reaeration Rate with Estimate Determined from Observed Conditions

The above estimated river reaeration rate of 0.64 per day at 20° C. and a river flow of 2500 CFS is substantially less than the theoretical values obtained from the theoretical formulas of Dobbins and O'Connor(1) or Churchill(2), which are on the order of 1.2 per day for the same river conditions, but is of the same order of magnitude as the reaeration rate determined from commonly accepted values(3) of the self-purification constant f, and the deoxygenation constant, k. While the limitations of the data used in fore-going analysis are fully recognized, it is considered reasonable to conclude from this and other data that the reaeration rate in the Chattahoochee River is substantially lower than those determined from the formulas of Dobbins and O'Connor(1), or Churchill(2).

Reaeration Rates Assumed

The reaeration rate of 0.64 at 20° C. and river flow of 2500 CFS has been assumed. In order to correct for variation in the reaeration rate with river flow, the relation $r = \frac{KV}{H^{5/3}}$ has been used.

The rates, adjusted for temperature and river flow, which have been used in determining the BOD load which may be discharged to the Chattahoochee, are as follows:

TABLE B-4

ASSUMED REAERATION RATES, PER DAY

River Flow, CFS	River Temperatures			
	20° C.	25° C.	30° C.	35° C.
700	0.88	0.96	1.05	1.15
1200	0.84	0.92	1.01	1.10
1500	0.81	0.88	0.96	1.06

Deoxygenation Constant, k

In the foregoing analysis of reaeration rates in the Chattahoochee River it was noted that the apparent rate of deoxygenation of the river, k, was 0.34 per day during a period when the river temperature averaged 20° C., which corresponds to a rate of 0.27 per day at 20° C., assuming a temperature characteristic of 0.046 per °C. The deoxygenation constant, k, is dependent on the character of the wastes and on the physical character of the river. The observed value of 0.27 per day at 20° C. is of the same order of magnitude as the commonly used value of 0.23 per day for large streams of normal velocity.(3) Inasmuch as providing secondary treatment to the wastes discharged to the Chattahoochee River should result in a lower deoxygenation constant, the value of 0.23 per day at 20° C. for the deoxygenation constant, k, has been assumed. Assuming a temperature characteristic of 0.046 per ° C., the values of k for the range of temperature under consideration would be:

TABLE B-5

DEOXYGENATION CONSTANT K

20° C.	0.23 per day
25° C.	0.29 per day
30° C.	0.36 per day
35° C.	0.46 per day

Initial Oxygen Deficit

Recent dissolved oxygen measurements by the USPHS indicate no significant dissolved oxygen deficit in the river above the Clayton Plant. No appreciable change in the water quality upstream from the Clayton Plant is expected in the future.

The treated wastes from the Clayton Plant will contain little dissolved oxygen and will therefore result in a dissolved oxygen deficit in the river immediately below the Clayton Plant in proportion to the percentage of wastes in the total river flow. The effect of the initial dissolved oxygen deficit on the quantity of organic matter which the river can assimilate is greatest at low flows and higher river temperatures. The initial dissolved oxygen deficit has been estimated for the range of flows and temperatures under consideration based on the estimated quantities of waste in the year 2000. (The effect of using the estimated initial oxygen deficit in the year 2000 in subsequent determinations related to the year 1985 is negligible.) These estimates are as follows:

TABLE B-6

INITIAL OXYGEN DEFICIT BELOW CLAYTON PLANT IN PPM

River Flow, CFS	River Temperatures 20° C.	25° C.	30° C.	35° C.
700	2.5	2.3	2.1	1.9
1200	1.4	1.3	1.2	1.0
1500	1.2	1.1	1.0	0.9

The time of occurrence, t_c, of the critical oxygen deficiency may be estimated by the formula:

$$t_c = \frac{1}{k(f-1)} \log_e \left\{ f \left(1 - (f-1) \frac{D_a}{L_a} \right) \right\}$$

It is noted that the above formula requires a trial and error determination of the initial first stage BOD, L_a. The values of t_c determined by the above formula using values of L_a based on the allowable BOD in the river hereafter determined, are as follows:

TABLE B-7

TIME IN DAYS FOR OCCURRENCE OF CRITICAL OXYGEN DEFICIT

River Flow, CFS	River Temperatures 20° C.	25° C.	30° C.	35° C.
700	1.6	1.3	0.9	0.6
1200	2.0	1.7	1.4	1.1
1500	2.1	1.8	1.5	1.2

Allowable 5 day—20° C. BOD in Chattahoochee River

The concentration of organic matter, in terms of PPM of 5 day 20° BOD, which can be assimilated by the Chattahoochee River without excessively depleting the dissolved oxygen in the river, estimated on the basis of the foregoing, is as follows:

TABLE B-8

ALLOWABLE 5 DAY 20° C. BOD, IN CHATTAHOOCHEE RIVER, PPM

River Flow, CFS	River Temperatures 20° C.	25° C.	30° C.	35° C.
700	17.4	11.2	6.4	3.1
1200	18.5	12.6	8.1	5.0
1500	18.5	12.6	8.1	5.0

Initial BOD Concentration in the River

In order to determine the quantity of organic matter which can safely be discharged by the water pollution control plants in the metropolitan area, the initial concentration of BOD in the river must be considered. In the recent survey of the Chattahoochee River by the U. S. Public Health Service, the average BOD of the river water above the Clayton Plant was found to be 3.5 PPM, a value substantially higher than normally found. Only a fraction of this BOD is attributable to domestic wastes, the greatest part coming from surface runoff and/or algae growth.

The estimated population tributary to the water pollution control plants discharging to the Chattahoochee River above the Clayton Plant in the year 2000 is 180,000. Given 90 per cent treatment, the wastes from this population will increase the BOD of the river by only 0.4 PPM at a river flow of 1200 CFS. A value of 3.5 PPM will be assumed for the initial concentration of BOD in the river, which value is considered high enough to allow for future increases in the discharge of treated wastes to the river above the Clayton Plant.

From Table B-8 above, which shows the estimated concentration of 5 day 20° C. BOD which can be assimilated by the Chattahoochee River while maintaining a minimum DO of 4.0 PPM, it is seen that at 35° C. the allowable BOD in the river is of the same order of magnitude as the assumed initial BOD of 3.5 PPM. At such a temperature, the saturation dissolved oxygen level is only 6.9 PPM. It is questionable whether a DO of 4.0 PPM could be maintained with the quantities of wastes and river flows under consideration when providing secondary treatment. Such high temperatures, however, are considered unlikely over a considerable period of time. The possibility of a river temperature of 35° C. has therefore not been considered in the following estimates of future treatment requirements.

Allowable Discharge of BOD to the Chattahoochee River by Water Pollution Control Plants in Metropolitan Area

The quantity of organic matter which may safely be discharged to the Chattahoochee River by the water pollution control plants in the metropolitan area may be estimated on the basis of the values of allowable concentration of BOD given in Table B-8 and the assumed initial BOD of 3.5 PPM for any river discharge. The most appropriate point of reference for river discharge is the Atlanta USGS gage near Vinings. In determining the quantity of BOD which may be discharged to the river, the approximate river discharge at the point of occurrence of the critical oxygen deficit should be used and therefore the stream and waste inflow and water withdrawals below the Atlanta USGS gage must be considered. The approximate river discharges at the point of occurrence of the critical oxygen deficit, relative to the river discharge at the Atlanta USGS gage, have been estimated for the range of river temperature under consideration from the estimates of inflow and withdrawal (Appendix "A", Table A-8 and A-9) and a stream inflow based on 0.25 CFS per square mile. (The quantity of inflow is determined by the distance below the Clayton Plant at which the critical oxygen deficit occurs, which is in turn determined by temperature and river discharge.)

The river flows thus determined have been used to estimate the quantity of organic matter, in terms of BOD population equivalents, which can be discharged by the Clayton Plant and other plants downstream relative to the river flow at the Vinings Gage and river temperature below the Clayton Plant as follows:

TABLE B-9

ALLOWABLE BOD POPULATION EQUIVALENTS IN CHATTAHOOCHEE RIVER FOR MAINTAINING 4.0 PPM IN DO

River Flow at Atlanta Gage, CFS	River Temperatures 20° C.	25° C.	30° C.
700	409,000	221,000	80,200
1200	700,000	417,000	206,000
1500	872,000	518,000	255,000

Estimated Future Degree of Treatment Required at Clayton Plant

The degree of BOD removal which would have to be maintained at the Clayton Plant and other plants downstream has been estimated on the basis of the allowable population equivalents given in Table B-9 above and on the estimated future population equivalents tributary to these plants of 1,717,000 in 1985 and 2,251,500 in the year 2000 (see Table A-1) for the range of river flows and temperatures under consideration. The above population equivalents (PE) are in addition to a tributary PE above Clayton Plant of 115,000 in 1985 and 180,000 PE expected in the year 2000. These estimates of percentage removals are as follows:

TABLE B-10

ESTIMATED FUTURE BOD REMOVAL REQUIRED TO MAINTAIN MINIMUM OXYGEN LEVEL IN THE CHATTAHOOCHEE RIVER

River Flow at Atlanta Gage, CFS	River Temperatures:	20° C.		25° C.		30° C.	
	Year:	1985	2000	1985	2000	1985	2000
700		76%	82%	87%	90%	95%	96%
1200		59%	69%	76%	82%	88%	91%
1500		49%	61%	70%	77%	85%	89%

The above estimates of the degree of treatment required to maintain 4.0 PPM DO in the river are shown graphically in Plates B-1 and B-2.

Assuming a minimum average weekly release from Morgan Falls Dam of 1600 CFS, the minimum weekday (Monday) reregulated discharge at the Atlanta USGS gage would be 1300 CFS in 1985 and 1230 CFS in the year 2000. From Plates B-1 and B-2, the degree of treatment required for these flows for the maximum river temperature of 20° C. at the Clyton Plant is found to be 56 per cent in 1985 and 68 per cent in the year 2000. At such flows, the river temperature rise resulting from operation of the Atkinson and McDonough steam-electric generating plants at design capacity is 8° C. and the resultant maximum temperature approximately 28° C. The degree of treatment required at this temperature is approximately 82 per cent in 1985 and 87 per cent in the year 2000.

The average minimum weekly river discharge at Atlanta resulting from an average weekly release of 1600 CFS from Buford Dam would be 1560 CFS in 1985 and 1500 CFS in the year 2000. The degree of treatment required at these river flows and the assumed maximum average river temperature of 19° C. at the Clayton Plant would be 46 per cent in 1985 and 58 per cent in the year 2000. The maximum average temperature below the steam-electric generating plants would be 26° C. and the associated degree of treatment would be 73 per cent in 1985 and 79 per cent in the year 2000.

The minimum release from Morgan Falls Dam is 750 CFS and the estimated resulting future river discharge at the Atlanta gage is 725 CFS in 1985 and 700 CFS in the year 2000. At the assumed maximum river temperature of 20° C. at the Clayton Plant, such flow, if extended, would require 76 per cent treatment in the year 1985 and 82 per cent treatment in the year 2000. At such flows, the river temperature below the steam-electric generating plants could reach 34° C. (93° F.) at which temperature it is doubtful whether 4.0 PPM DO could be maintained in the river.

The above estimates of the future treatment required for the estimated maximum temperatures at and below the Clayton Plant are represented graphically in Plates 6 and 7 included in the main body of the report.

Accuracy of Assumed Constants

The foregoing estimate of the future treatment which must be provided for wastes discharged to the Chattahoochee River in order to maintain a dissolved oxygen level of 4.0 PPM have been based on a great many variable factors. The assumptions regarding the reaeration constants, deoxygenation constants, initial dissolved oxygen levels and initial BOD of the river have been based insofar as possible on observed conditions in the river. The temperature characteristics of the various parameters and the method used for determining the oxygen deficits resulting from a given concentration of organic matter (the Streeter-Phelps equations) are commonly accepted. While there are many different methods of estimating each of the variables involved in the estimates of future treatment requirements, the values assumed for these variables and the resultant estimates are considered to be as accurate as can be determined with information currently available.

While future extensive sampling of the river may permit more accurate determination of the reaeration or deoxygenation constants of the river, such determinations would not change the relative importance of river temperature and river flow as indicated by the foregoing estimates of future treatment requirements, or significantly change the order of magnitude of the treatment requirements.

References

1) W. W. Eckenfelder and D. J. O'Conner, "Biological Waste Treatment." Pergamon Press Ltd., London, 1961.

(2) M. A. Churchill, H. L. Elmore, and R. A. Buckingham, "The Prediction of Stream Reaeration Rates." Proceedings of A.S.C.E., Volume 88, No. SA4, July 1962, Part 1.

(3) G. M. Fair and J. C. Geyer, "Water Supply and Waste Water Disposal." John Wiley and Sons, New York, 1963.

APPENDIX "C"

ESTIMATES OF COLIFORM BACTERIAL CONCENTRATIONS IN CHATTAHOOCHEE RIVER

Present Coliform Concentration

The number of coliform organisms in domestic waste is proportional to the population contributing the wastes. The number of coliform organisms in raw sewage (1) has been found to range from 57 to 114 billion per day per capita in summer time. The removal of coliform organisms accomplished in primary waste treatment processes is approximately 50 per cent. When wastes are discharged to a stream, the coliform organisms far outnumber their natural predators and the number of coliform generally increases 4 to 8 times during a period of 10 to 15 hours after which the increase in the number of predators brings about a decrease in the number of coliform organisms. The rate of decrease of the number of coliforms decreases with decreasing concentration.

The median coliform concentrations in the Chattahoochee River found during the river survey by the USPHS in the summer of 1965 were as follows:

TABLE C-1

OBSERVED COLIFORM CONCENTRATIONS

	Station, Highway No.	Miles from Clayton	Median coliform concentration, per 100 ML.
21 Samples June and July 1965	I-75	3 (above)	4,900
	280	2 (below)	540,000
	139	6 "	2,200,000
	166	15 "	3,300,000
	92	19 "	2,400,000
	27	41 "	330,000
17 samples Aug. and Sept. 1965	219	81 "	17,000
	109	87 "	7,900
	238	93 "	11,000
	29	102 "	7,900

The pattern of increase of coliform organisms below the Clayton Plant followed by a rapid decrease in coliform numbers is consistent with the generally observed coliform pattern. The above concentrations are consistent with the known tributary population, degree of treatment provided, and river flow.

Future Coliform Concentrations After Treatment and Chlorination

The initial number of coliform organisms in a waste is proportional to population. The increase in coliform numbers within the sewer system, however, is dependent on the time required for the wastes to reach the treatment plant and on the quantity of food material available in the wastes. Inasmuch as the Clayton Plant serves a very large area and the organic waste load relative to the tributary population is exceptionally heavy, the estimates of future coliform concentrations have been based on tributary population equivalents rather than population.

Generally, the reduction in coliform concentration accomplished by treatment is approximately equal to the degree of removal of organic matter. If 85 per cent treatment is maintained at the Clayton Plant, then a like degree of coliform removal will be accomplished. Chlorination of the treated wastes for a fifteen minute period so as to maintain 0.2 to 0.6 PPM residual chlorine should reduce the coliform concentration by an additional 99.9 per cent(2) for an overall coliform reduction of 99.985 per cent. The coliform concentrations which would result in the river if such treatment were maintained at all plants discharging to the Chattahoochee River have been estimated for various river flows for the year 2000 based on the following assumptions.

1. A reduction in coliforms of 99.985 per cent would be accomplished by treatment and chlorination.

2. The potential peak coliform number is related to the BOD population equivalent according to the formula(1):

$$\text{MPN} = \frac{\text{BOD population equivalent x } 10^5}{\text{Q (CFS) x } 6.1}$$

3. The population equivalent tributary to the river above the Clayton Plant of 180,000 enters the river

12 miles above Clayton. The population equivalent tributary to the Clayton Plant is 1,500,000. The population equivalent tributary to the river below Clayton of 751,500 enters the river 12 miles below Clayton.

4. River velocity is 1 mile per hour.

5. The coliform peak occurs 12 hours after discharge, whereafter the coliforms die away according to observed patterns.

6. The coliform concentration at the point of discharge is 20 per cent of the peak concentration.

7. The additional dilution entering the river below the Clayton Plant has been determined from Table A-9 and an assumed inflow of 0.25 CFS per square mile.

The estimated coliform concentrations which result from the above conditions are as follows:

TABLE C-2

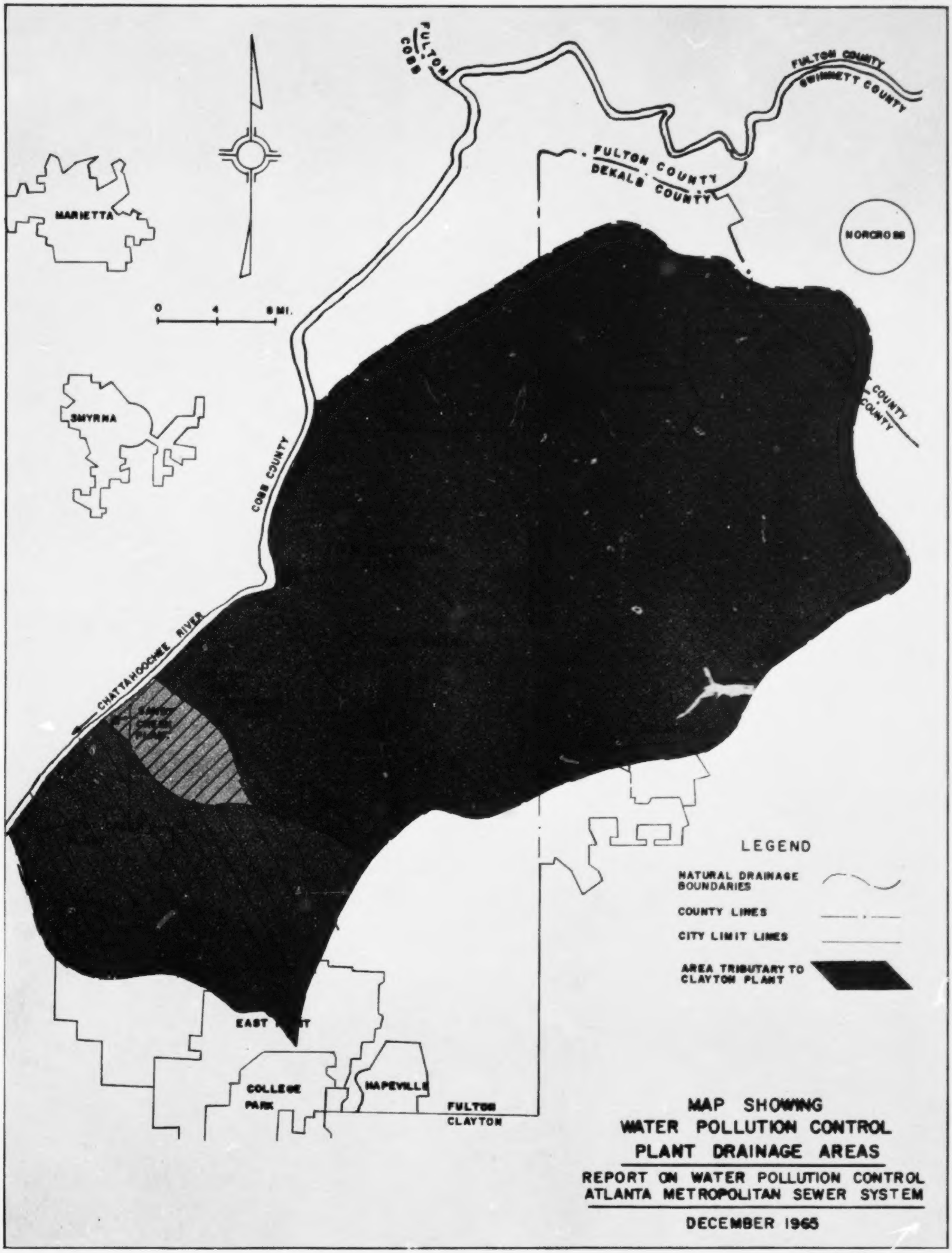
ESTIMATED FUTURE COLIFORM CONCENTRATIONS AFTER TREATMENT AND CHLORINATION, MPN PER 100 ML.

			River Station		
River Flow at Atlanta Gage, CFS	Just Above Clayton Plant	Just Below Clayton Plant	12 Miles Below Clayton Plant	24 Miles Below Clayton Plant	48 Miles Below Clayton Plant
700	630	1680	5280	4950	1900
1200	365	980	3365	3720	1680
1500	300	792	2765	3120	1600

References:

(1) F. W. Kittrell and Santo A. Fufari, "Observations of Coliform Bacteria in Streams", Water Pollution Control Federation Journal, 35:1361 (Nov. 1963).

(2) "Chlorination of Sewage and Industrial Wastes", Manual of Practice No. 4, Federation of Sewage and Industrial Wastes Associations, Champaign, Illinois, 1951.


FULTON
COBB
FULTON COUNTY
GWINNETT COUNTY
FULTON COUNTY
DEKALB COUNTY
MARIETTA
NORCROSS
0 4 8 MI.
SMYRNA
COBB COUNTY
COUNTY
COUNTY
CHATTAHOOCHEE RIVER
EAST POINT
COLLEGE PARK
HAPEVILLE
FULTON
CLAYTON
LEGEND
NATURAL DRAINAGE BOUNDARIES
COUNTY LINES
CITY LIMIT LINES
AREA TRIBUTARY TO CLAYTON PLANT

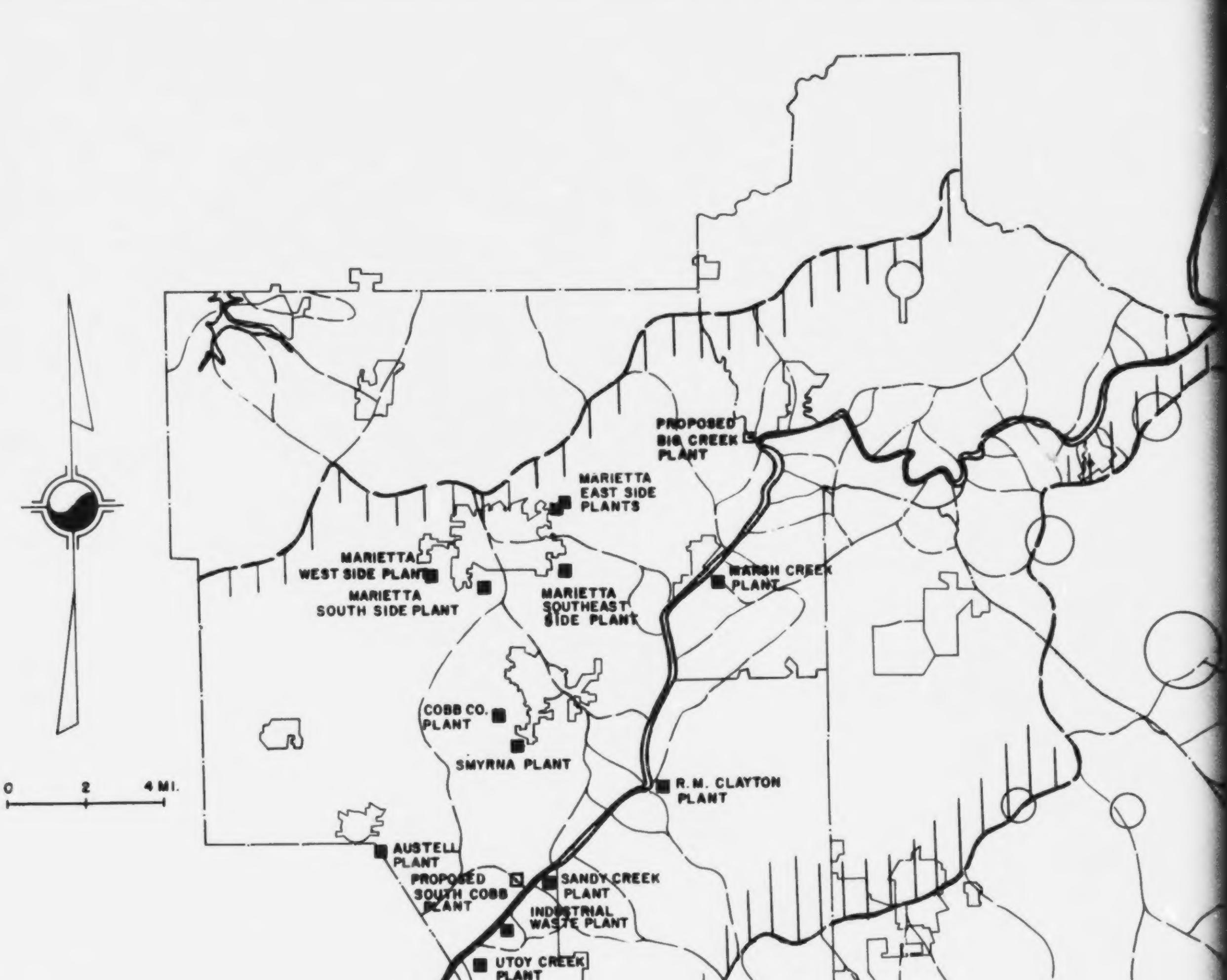
MAP SHOWING
WATER POLLUTION CONTROL
PLANT DRAINAGE AREAS

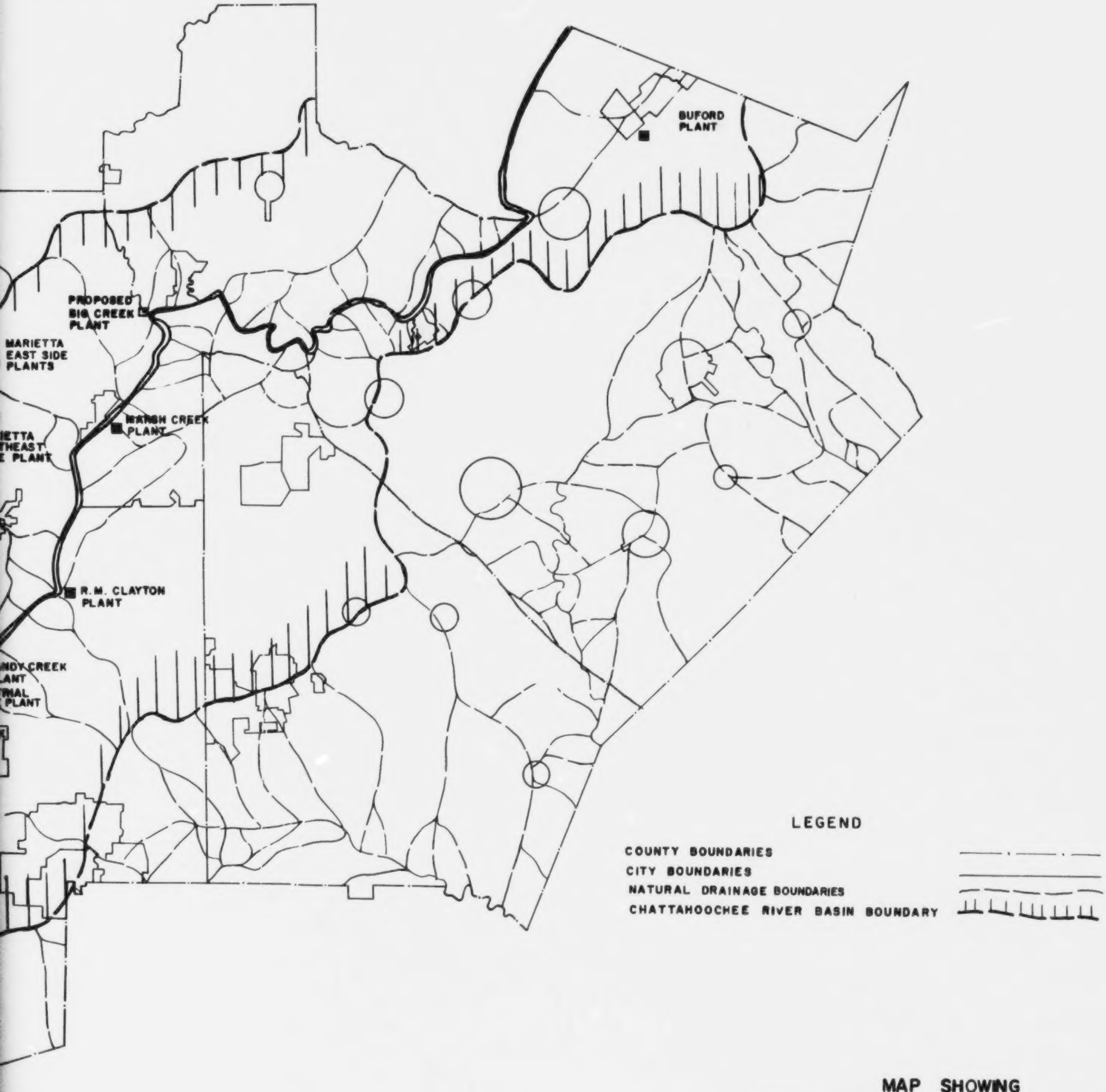
REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE I

405a


0
2
4 MI.
PROPOSED BIG CREEK PLANT
MARIETTA EAST SIDE PLANTS
MARIETTA WEST SIDE PLANT
MARIETTA SOUTH SIDE PLANT
MARIETTA SOUTHEAST SIDE PLANT
MARSH CREEK PLANT
COBB CO. PLANT
SMYRNA PLANT
R.M. CLAYTON PLANT
AUSTELL PLANT
PROPOSED SOUTH COBB PLANT
SANDY CREEK PLANT
INDUSTRIAL WASTE PLANT
UTOY CREEK PLANT
CHATTAHOOCHEE RIVER
CAMP CREEK PLANT
FAIRBURN PLANT
PALMETTO PLANT

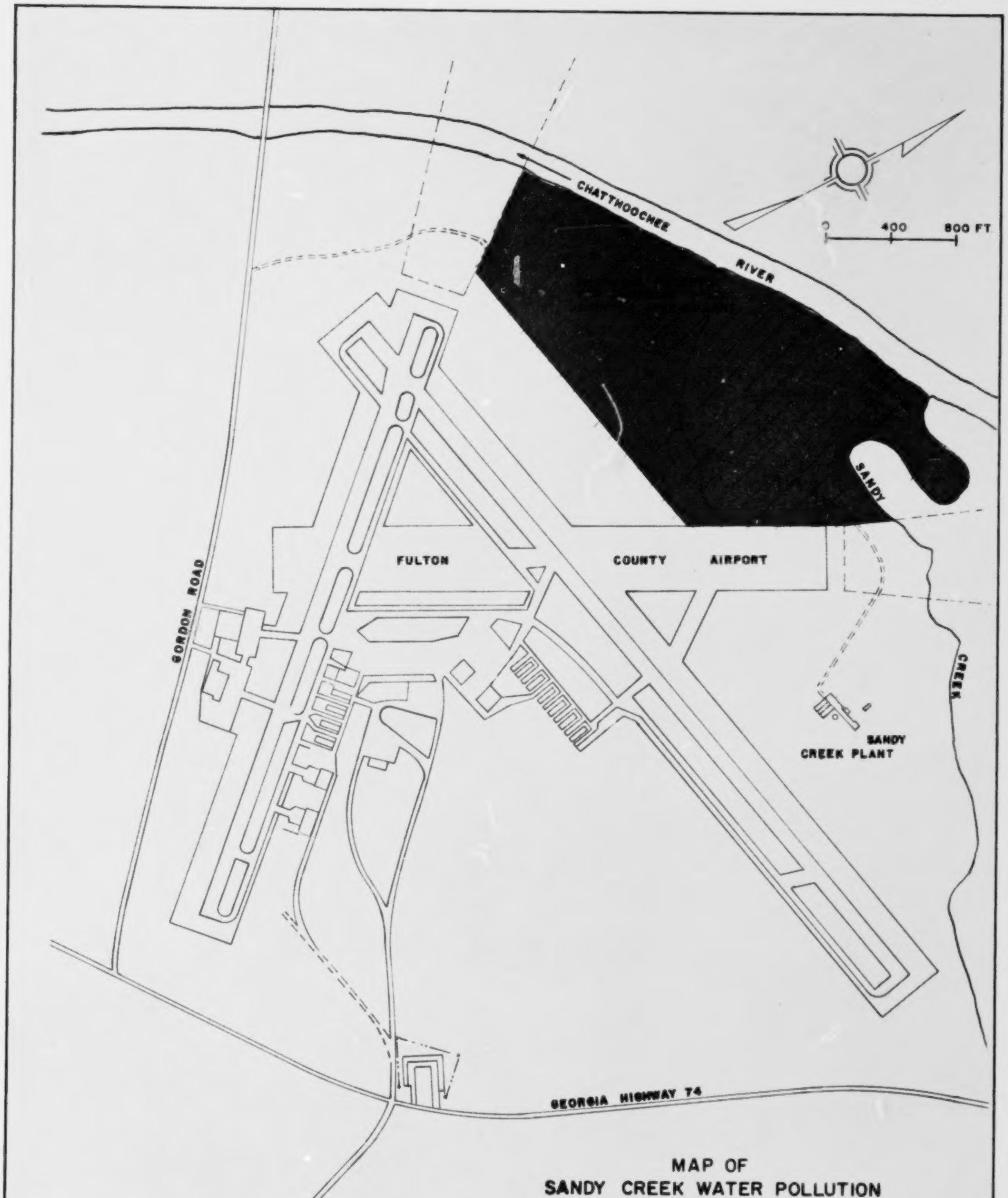

BUFORD PLANT
PROPOSED BIG CREEK PLANT
MARIETTA EAST SIDE PLANTS
MARSH CREEK PLANT
IETTA
THEAST
E PLANT
R.M. CLAYTON PLANT
NDY CREEK
LANT
RIAL
PLANT
LEGEND
COUNTY BOUNDARIES
CITY BOUNDARIES
NATURAL DRAINAGE BOUNDARIES
CHATTAHOOCHEE RIVER BASIN BOUNDARY

MAP SHOWING
WATER POLLUTION CONTROL PLANTS
TRIBUTARY TO CHATTAHOOCHEE RIVER

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 2

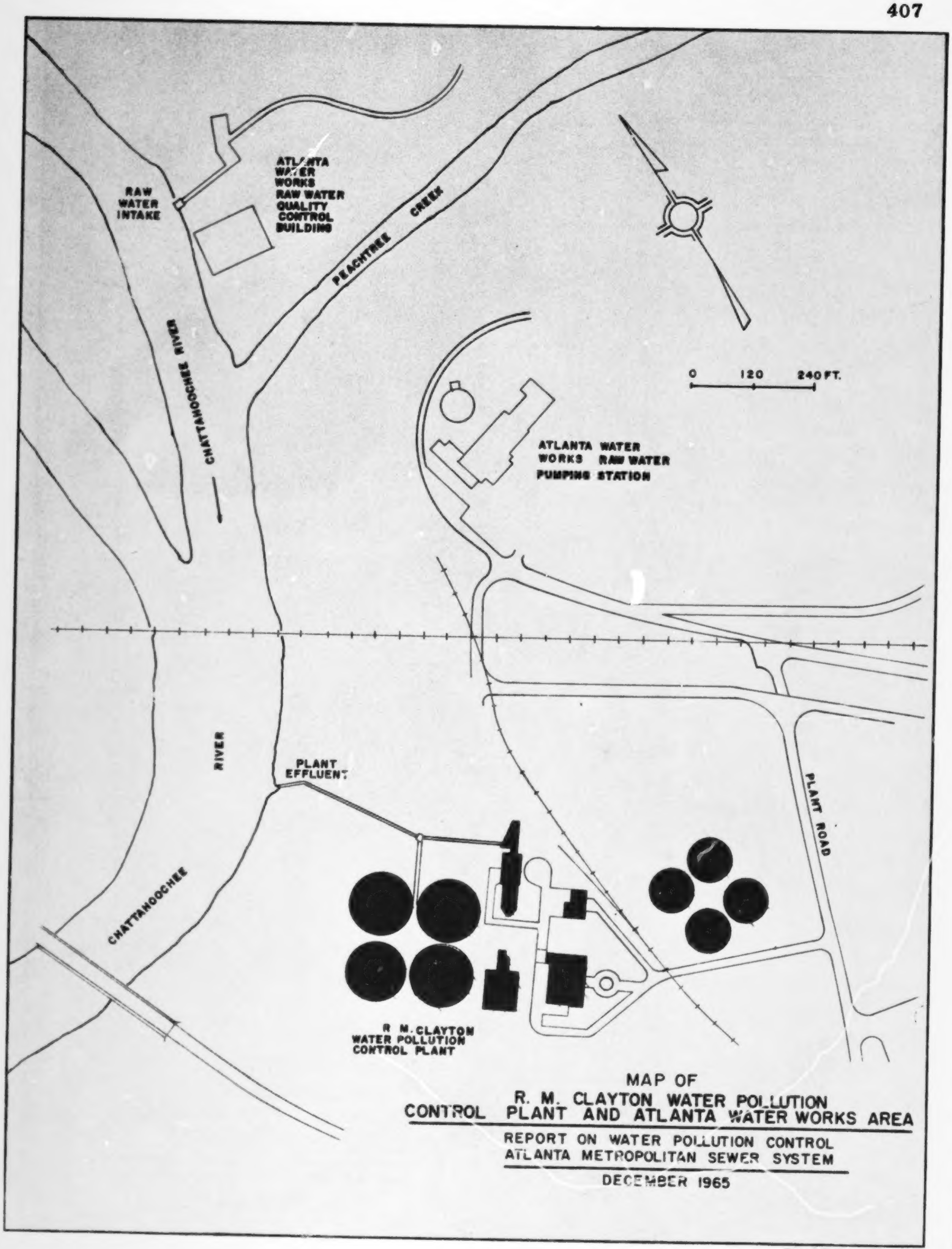

CHATTHOOCHEE RIVER
0 400 800 FT
SANDY
CREEK
FULTON COUNTY AIRPORT
GORDON ROAD
SANDY CREEK PLANT
GEORGIA HIGHWAY 74

MAP OF
SANDY CREEK WATER POLLUTION
CONTROL PLANT AREA

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 3


RAW WATER INTAKE
ATLANTA WATER WORKS RAW WATER QUALITY CONTROL BUILDING
PEACHTREE CREEK
CHATTAHOOCHEE RIVER
0 120 240 FT.
ATLANTA WATER WORKS RAW WATER PUMPING STATION
RIVER
PLANT EFFLUENT
PLANT ROAD
CHATTAHOOCHEE
R. M. CLAYTON WATER POLLUTION CONTROL PLANT

MAP OF
R. M. CLAYTON WATER POLLUTION
CONTROL PLANT AND ATLANTA WATER WORKS AREA

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 4

State of Georgia
Water Quality Control Board
47 TRINITY AVE. ATLANTA, GEORGIA 30334

August 6, 1965

Mr. C. E. Drummond, Jr.
Wiedeman & Singleton, Engineers
P. O. Box 1878
Atlanta, Georgia 30301

Dear Mr. Drummond:

In response to your letter of April 29, 1965 relating to criteria for the design of water pollution control facilities for City of Atlanta, the following requirements, approved by the State Water Quality Control Board, are furnished:

1. All wastes discharged into the Chattahoochee River from the Clayton Plant or plants located downstream from the Clayton Plant should receive an oxidizing process of approximately 85 percent secondary treatment, to obtain a relatively stable effluent and to limit coliform counts to values suitable for all practical and reasonable uses of the stream. Chlorination of the effluent from this treatment shall be provided.

2. The degree of secondary treatment should be such that the river will be free of noticeable pollution and from objectionable odors to which the general public could make justifiable complaints. This degree of treatment should be such as to maintain an ample supply of dissolved oxygen in the Chattahoochee River as it flows past the plant after receiving plant effluent, as determined by the Georgia Water Quality Control Board.

We believe these criteria will enable the City to arrive at a reasonable and practical solution to its problem.

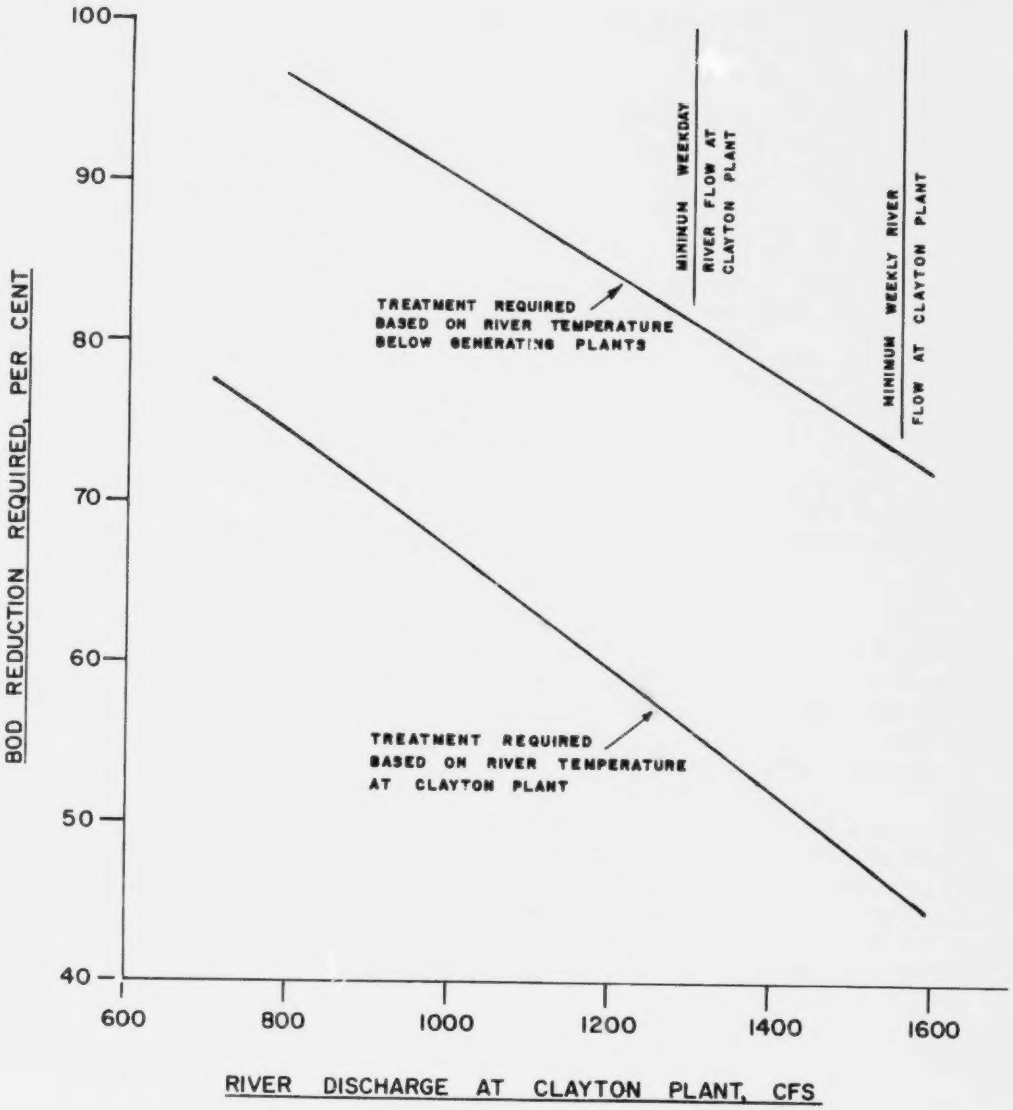
Sincerely,

R. S. Howard, Jr.
Executive Secretary

RSH:aj

cc: Mr. M. B. Nixon
Mr. Robert H. Morriss

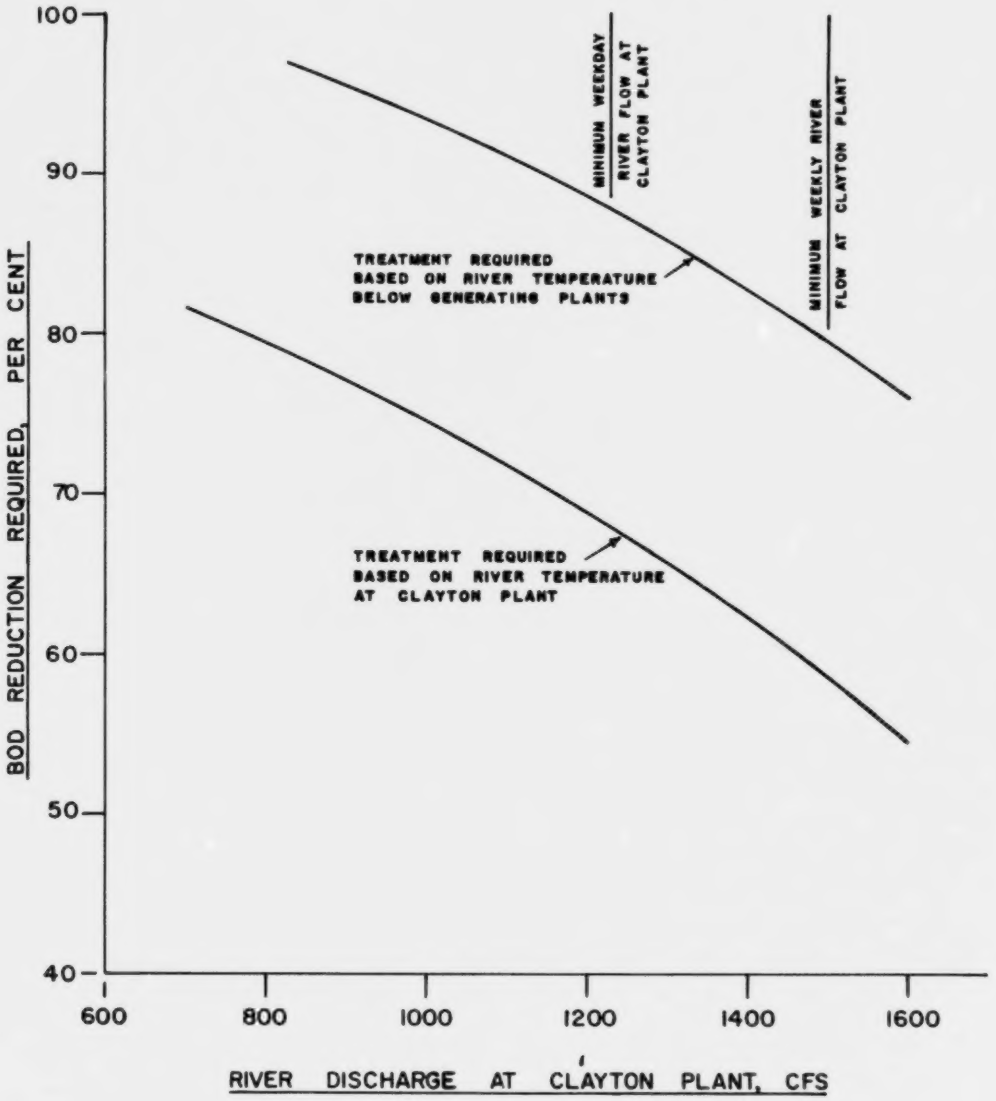
PLATE 5



TREATMENT REQUIREMENTS VS. RIVER DISCHARGE
FOR MAXIMUM RIVER TEMPERATURE
AT AND BELOW CLAYTON PLANT, 1985

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

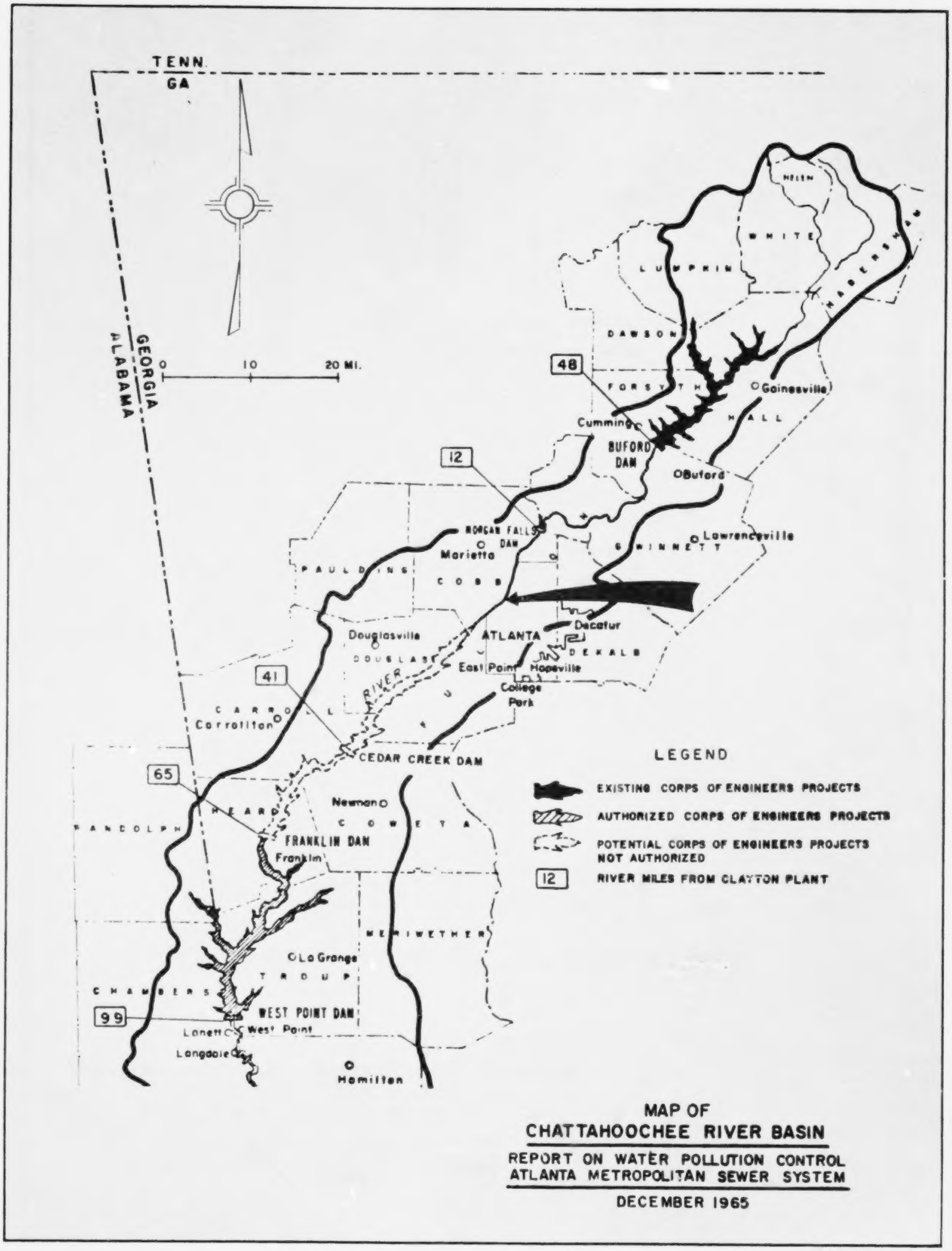
DECEMBER 1965



TREATMENT REQUIREMENTS VS. RIVER DISCHARGE
FOR MAXIMUM RIVER TEMPERATURE
AT AND BELOW CLAYTON PLANT, 2000

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 7


TENN.
GA
GEORGIA
ALABAMA
0
10
20 MI.
LUMPKIN
WHITE
HABERSHAM
DAWSON
FORSYTH
HALL
48
Gainesville
Cumming
BUFORD DAM
Buford
12
MORGAN FALLS DAM
Marietta
Lawrenceville
GWINNETT
PAULDING
COBB
Decatur
ATLANTA
DEKALB
Douglasville
DOUGLAS
East Point
Hapeville
College Park
RIVER
41
CARROLL
Carrollton
CEDAR CREEK DAM
65
HEARD
Newnan
COWETA
RANDOLPH
FRANKLIN DAM
Franklin
MERIWETHER
La Grange
TROUP
CHAMBERS
99
WEST POINT DAM
Lanett
West Point
Langdale
Hamilton
LEGEND
EXISTING CORPS OF ENGINEERS PROJECTS
AUTHORIZED CORPS OF ENGINEERS PROJECTS
POTENTIAL CORPS OF ENGINEERS PROJECTS NOT AUTHORIZED
12 RIVER MILES FROM CLAYTON PLANT

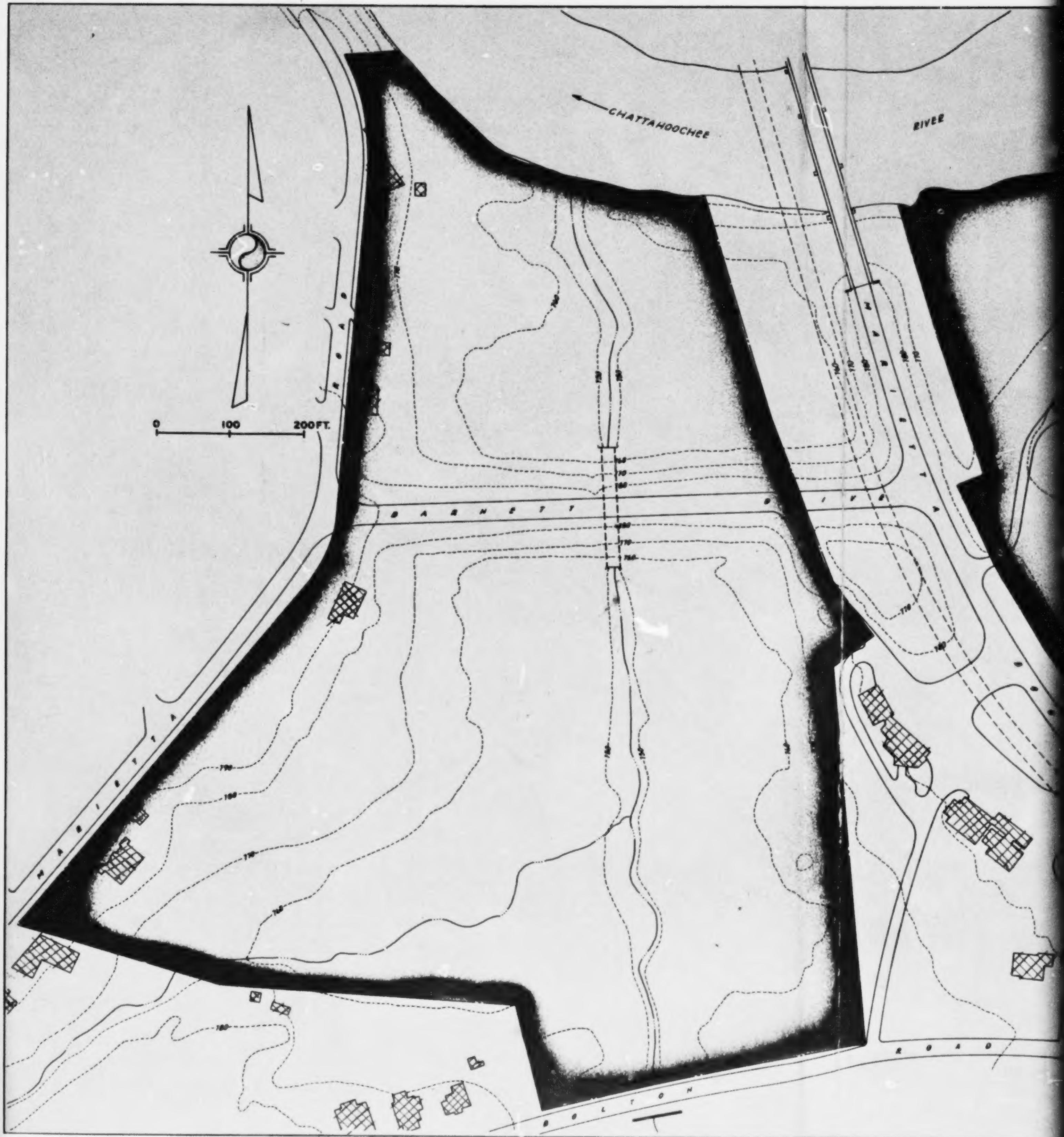
MAP OF
CHATTAHOOCHEE RIVER BASIN

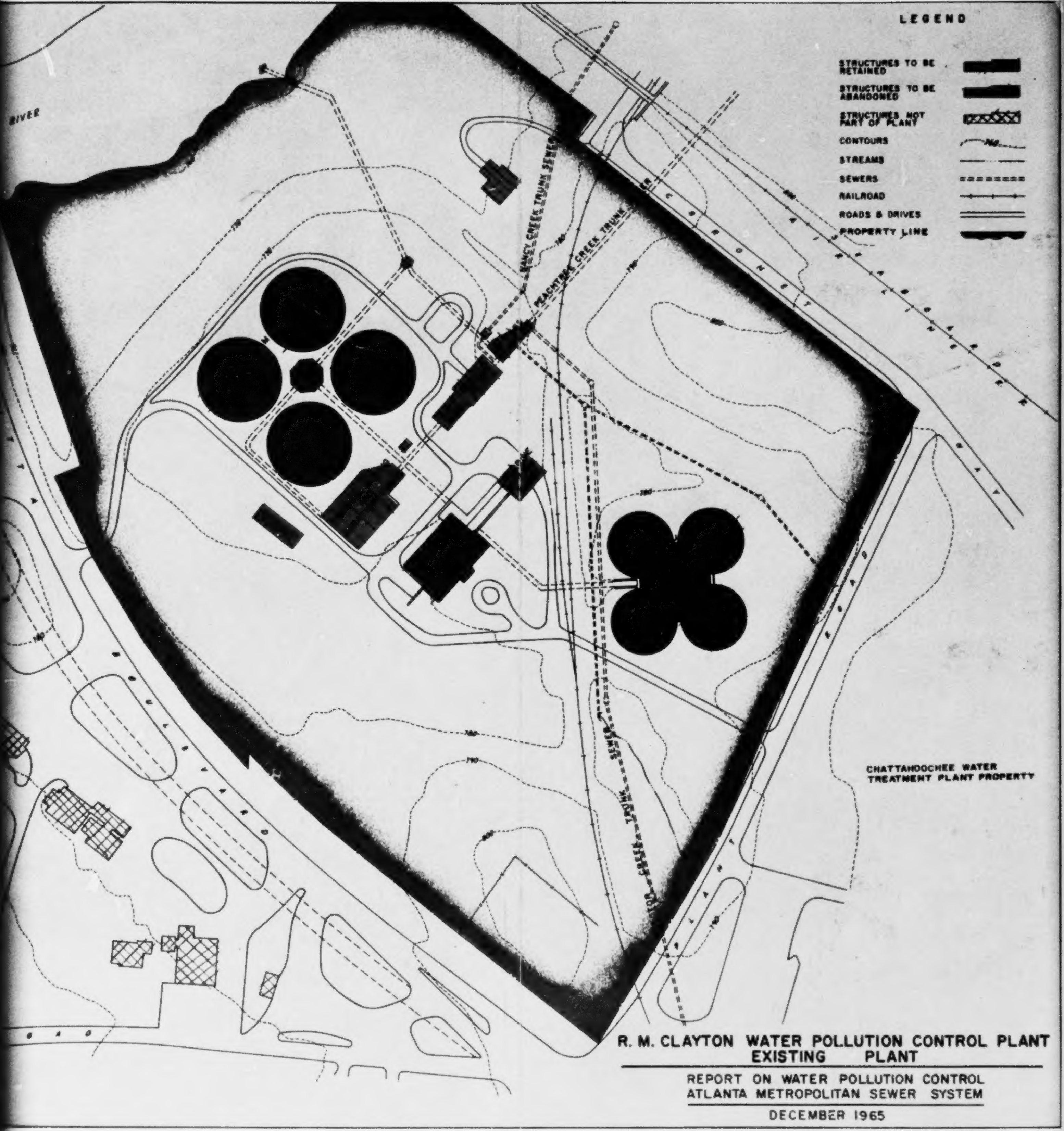
REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 8

412a


CHATTAHOOCHEE
RIVER
ROAD
BARNETT
DRIVE
MARIETTA
MARIETTA
BOLTON
ROAD
0
100
200FT.
790
780
770
760


LEGEND
STRUCTURES TO BE RETAINED
STRUCTURES TO BE ABANDONED
STRUCTURES NOT PART OF PLANT
CONTOURS
STREAMS
SEWERS
RAILROAD
ROADS & DRIVES
PROPERTY LINE
RIVER
NANCY CREEK TRUNK SEWER
PEACHTREE CREEK TRUNK SEWER
CREEK TRUNK SEWER
BOULEVARD
PLANT ROAD
PARKWAY
CHATTAHOOCHEE WATER TREATMENT PLANT PROPERTY
770
780
790

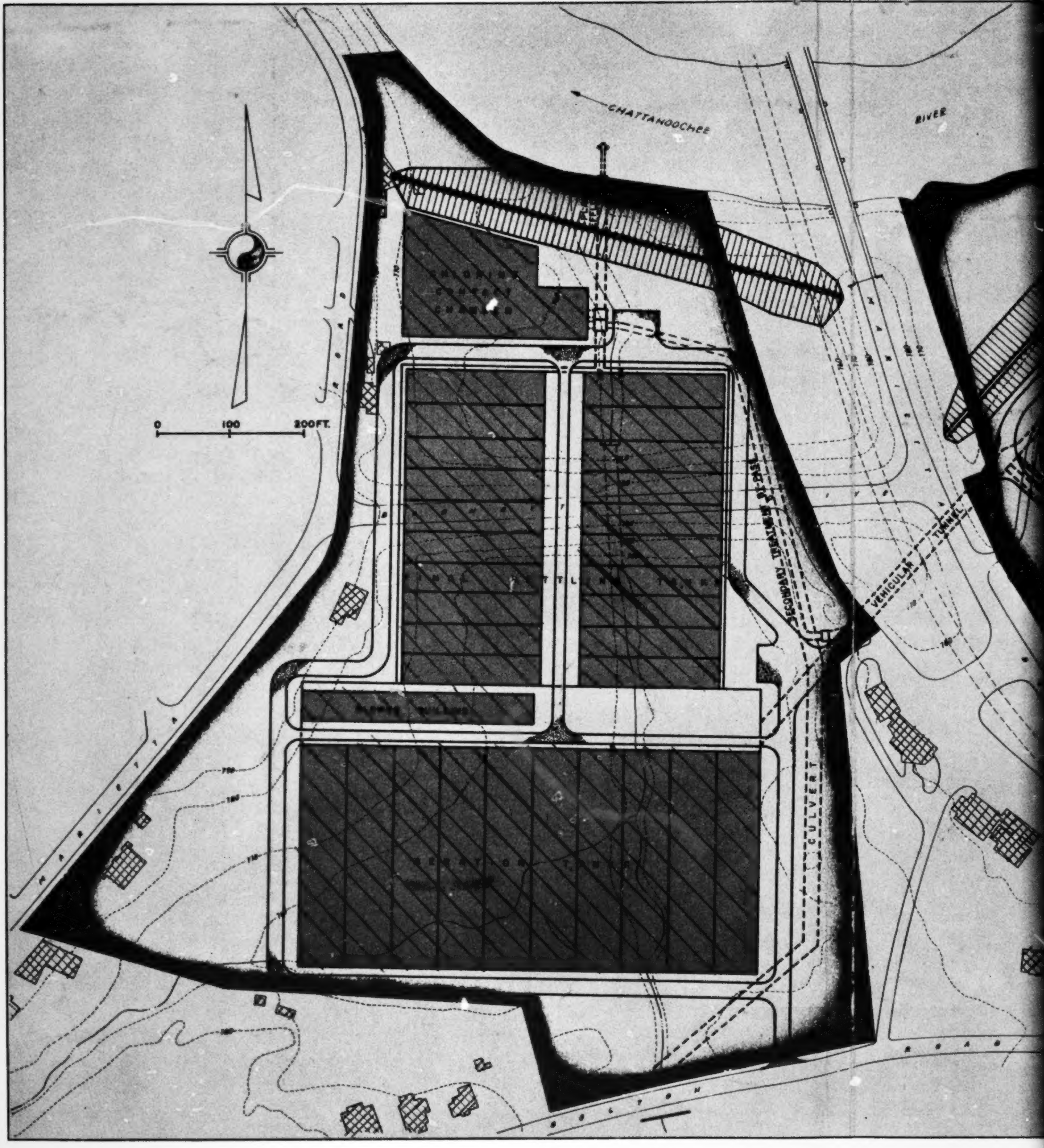
R. M. CLAYTON WATER POLLUTION CONTROL PLANT
EXISTING PLANT

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 9

413a


CHATTANOOCHEE
RIVER
CHLORINE CONTACT CHAMBER
FINAL SETTLING TANKS
BLOWER BUILDING
AERATION TANKS
SECONDARY TREATMENT BY-PASS
VEHICULAR TUNNEL
CULVERT
MARIETTA ROAD
BOLTON ROAD
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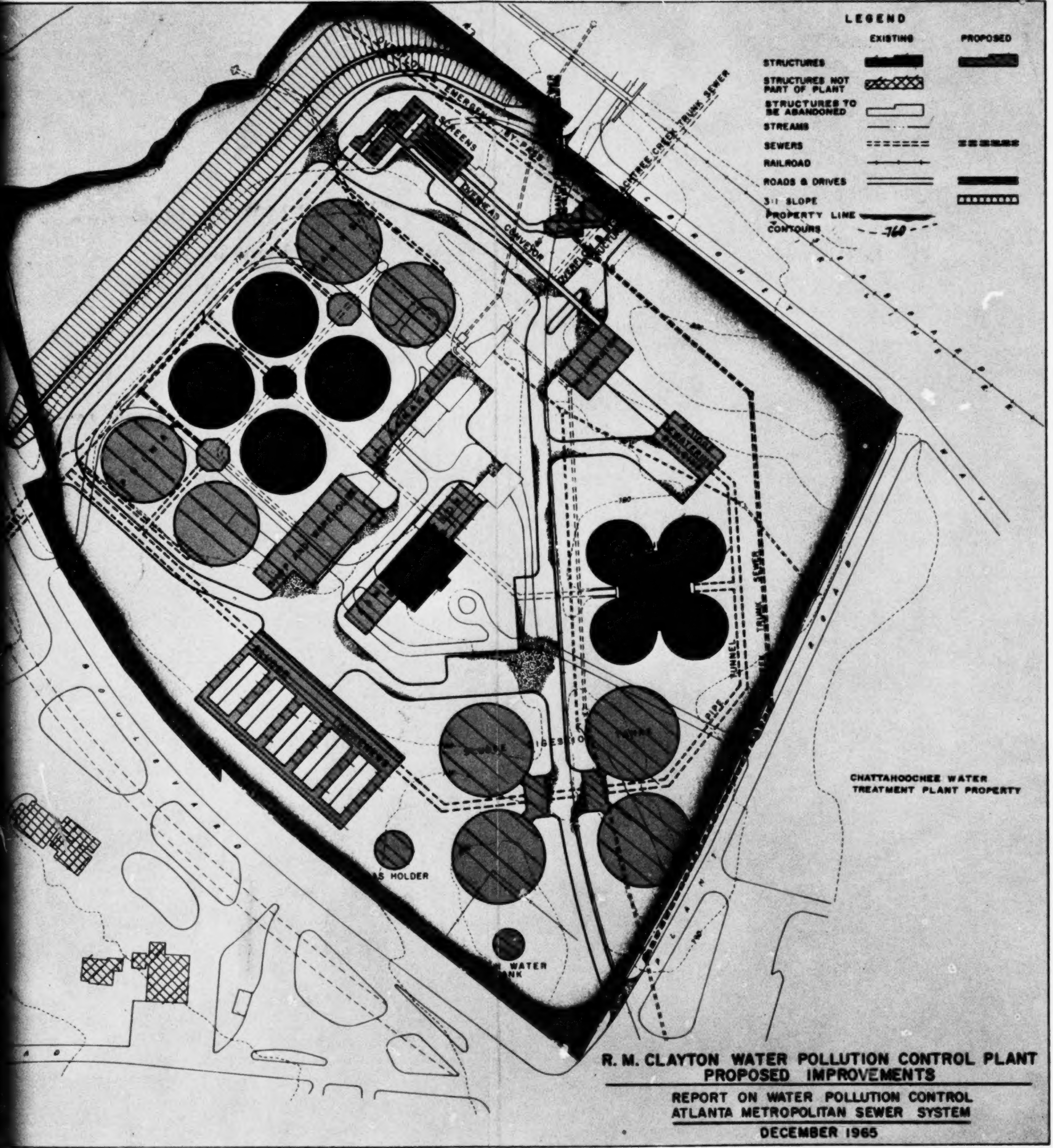
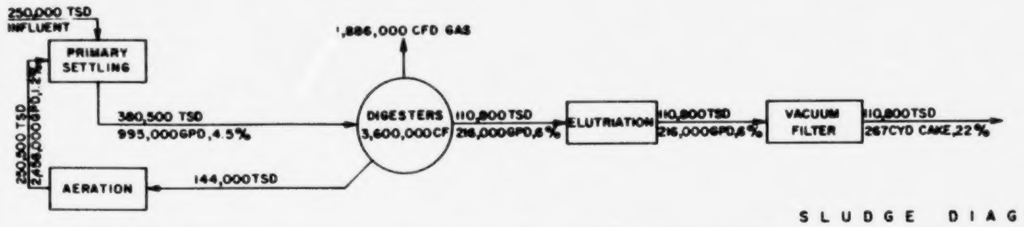
100
200FT.
170
160
110


LEGEND
EXISTING
PROPOSED
STRUCTURES
STRUCTURES NOT PART OF PLANT
STRUCTURES TO BE ABANDONED
STREAMS
SEWERS
RAILROAD
ROADS & DRIVES
3:1 SLOPE
PROPERTY LINE
CONTOURS
760
EMERGENCY BY-PASS
SCREENS
OVERHEAD CONVEYOR
PEACHTREE CREEK TRUNK SEWER
TUNNEL
TRUNK
PIPE
GAS HOLDER
WATER TANK
CHATTAHOOCHEE WATER TREATMENT PLANT PROPERTY

R. M. CLAYTON WATER POLLUTION CONTROL PLANT
PROPOSED IMPROVEMENTS

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 10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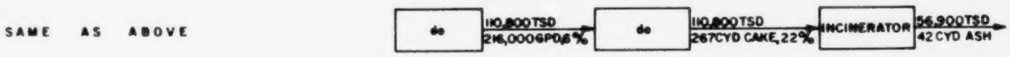
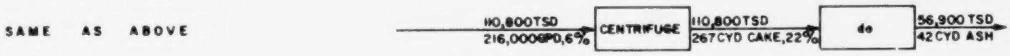
INFLUENT
PRIMARY SETTLING
1,886,000 CFD GAS
230,500 TSD
2,456,000GPD,1.2%
380,500 TSD
995,000GPD,4.5%
DIGESTERS
3,600,000CF
110,800 TSD
216,000GPD,6%
ELUTRIATION
110,800TSD
216,000GPD,6%
VACUUM FILTER
110,800TSD
267CYD CAKE,22%
AERATION
144,000TSD

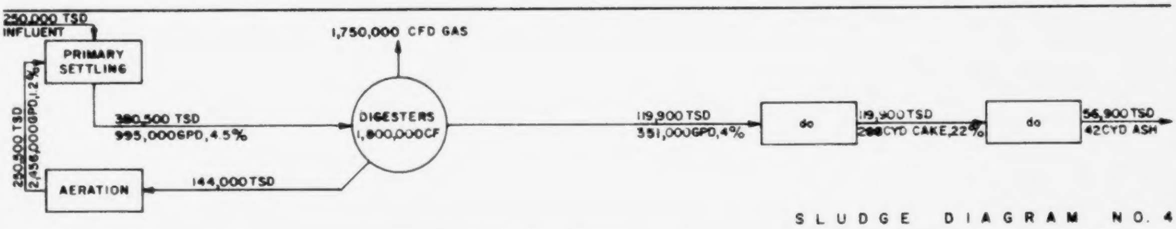
SLUDGE DIAGRAM NO. 1


SAME AS ABOVE
do
110,800TSD
216,000GPD,6%
do
110,800TSD
267CYD CAKE,22%
INCINERATOR
56,900TSD
42 CYD ASH

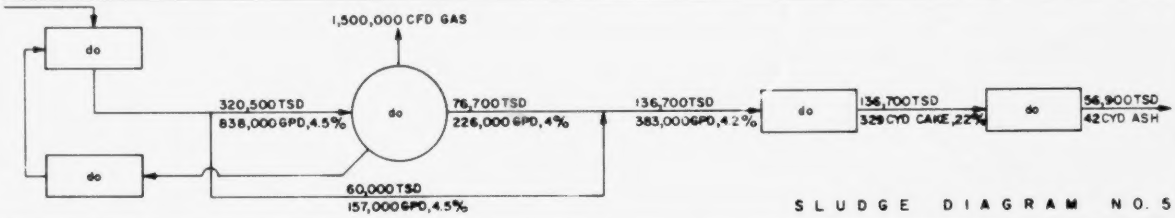
SLUDGE DIAGRAM NO. 2


SAME AS ABOVE
110,800TSD
216,000GPD,6%
CENTRIFUGE
110,800TSD
267CYD CAKE,22%
do
56,900 TSD
42 CYD ASH

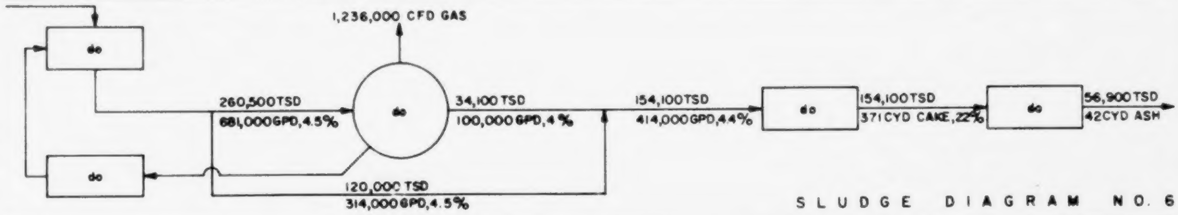
SLUDGE DIAGRAM NO. 3


250,000 TSD
INFLUENT
PRIMARY SETTLING
1,750,000 CFD GAS
230,500 TSD
2,456,000GPD,1.2%
380,500 TSD
995,000GPD,4.5%
DIGESTERS
1,800,000CF
119,900 TSD
351,000GPD,4%
do
119,900TSD
288CYD CAKE,22%
do
56,900TSD
42CYD ASH
AERATION
144,000TSD

SLUDGE DIAGRAM NO. 4


do
1,500,000 CFD GAS
320,500TSD
838,000GPD,4.5%
do
76,700TSD
226,000GPD,4%
136,700TSD
383,000GPD,4.2%
do
136,700TSD
329CYD CAKE,22%
do
56,900TSD
42CYD ASH
do
60,000TSD
157,000GPD,4.5%

SLUDGE DIAGRAM NO. 5


do
1,236,000 CFD GAS
260,500TSD
681,000GPD,4.5%
do
34,100 TSD
100,000GPD,4%
154,100TSD
414,000GPD,4.4%
do
154,100TSD
371CYD CAKE,22%
do
56,900TSD
42CYD ASH
do
120,000 TSD
314,000GPD,4.5%

SLUDGE DIAGRAM NO. 6

ABBREVIATIONS USED:

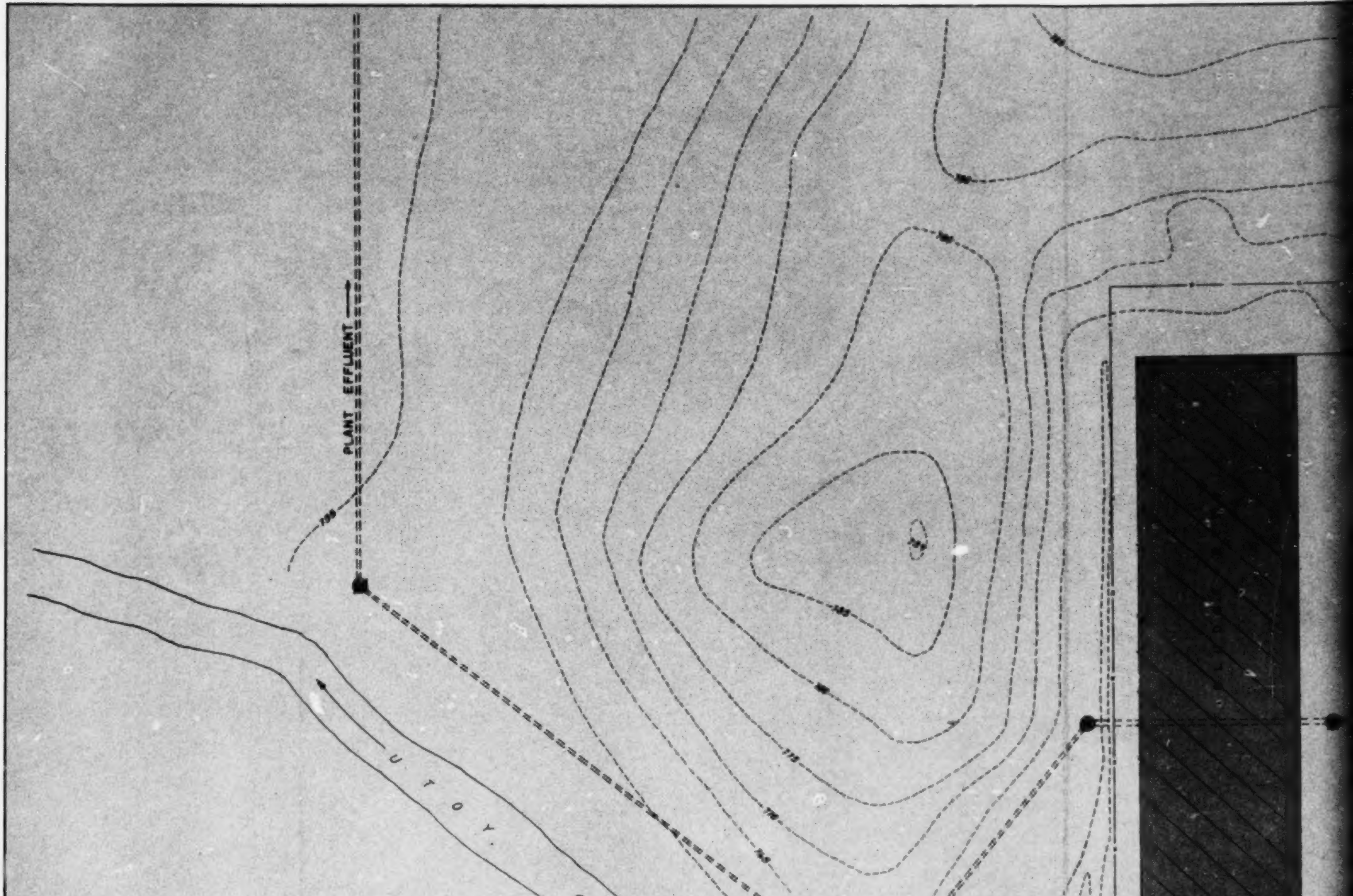
TSD	TOTAL SOLIDS PER DAY, IN POUNDS
GPD	GALLONS PER DAY
CFD	CUBIC FEET PER DAY
CYD	CUBIC YARDS PER DAY
%	PERCENT OF SOLIDS, BY WEIGHT, IN SLUDGE

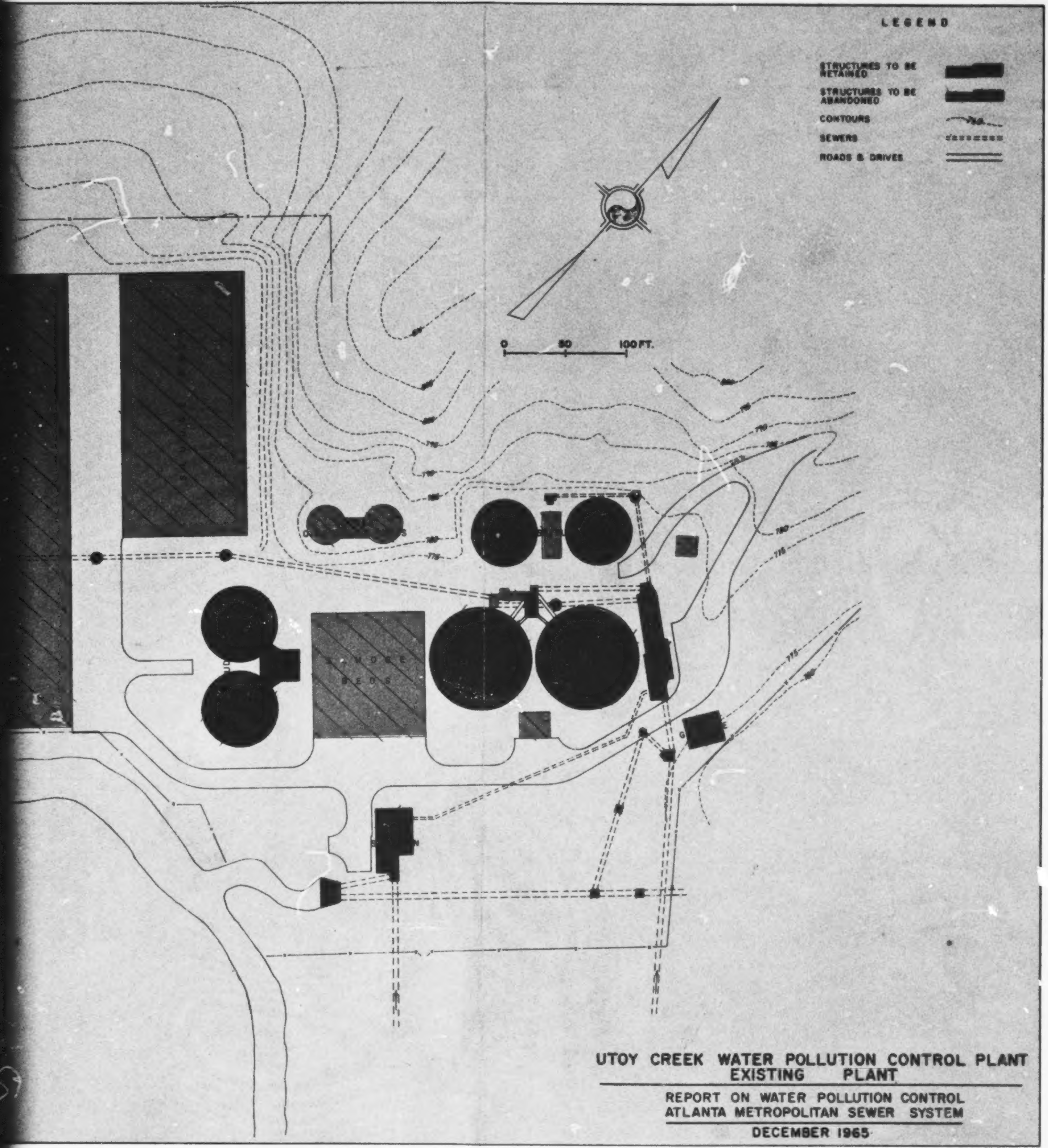
R. M. CLAYTON WATER POLLUTION CONTROL PLANT
SLUDGE HANDLING FACILITIES

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 11

415a


PLANT EFFLUENT
UTOY. CREEK
175
170
165
160
155


LEGEND
STRUCTURES TO BE RETAINED
STRUCTURES TO BE ABANDONED
CONTOURS
SEWERS
ROADS & DRIVES
0
50
100 FT.
SLUDGE BEDS
775
780

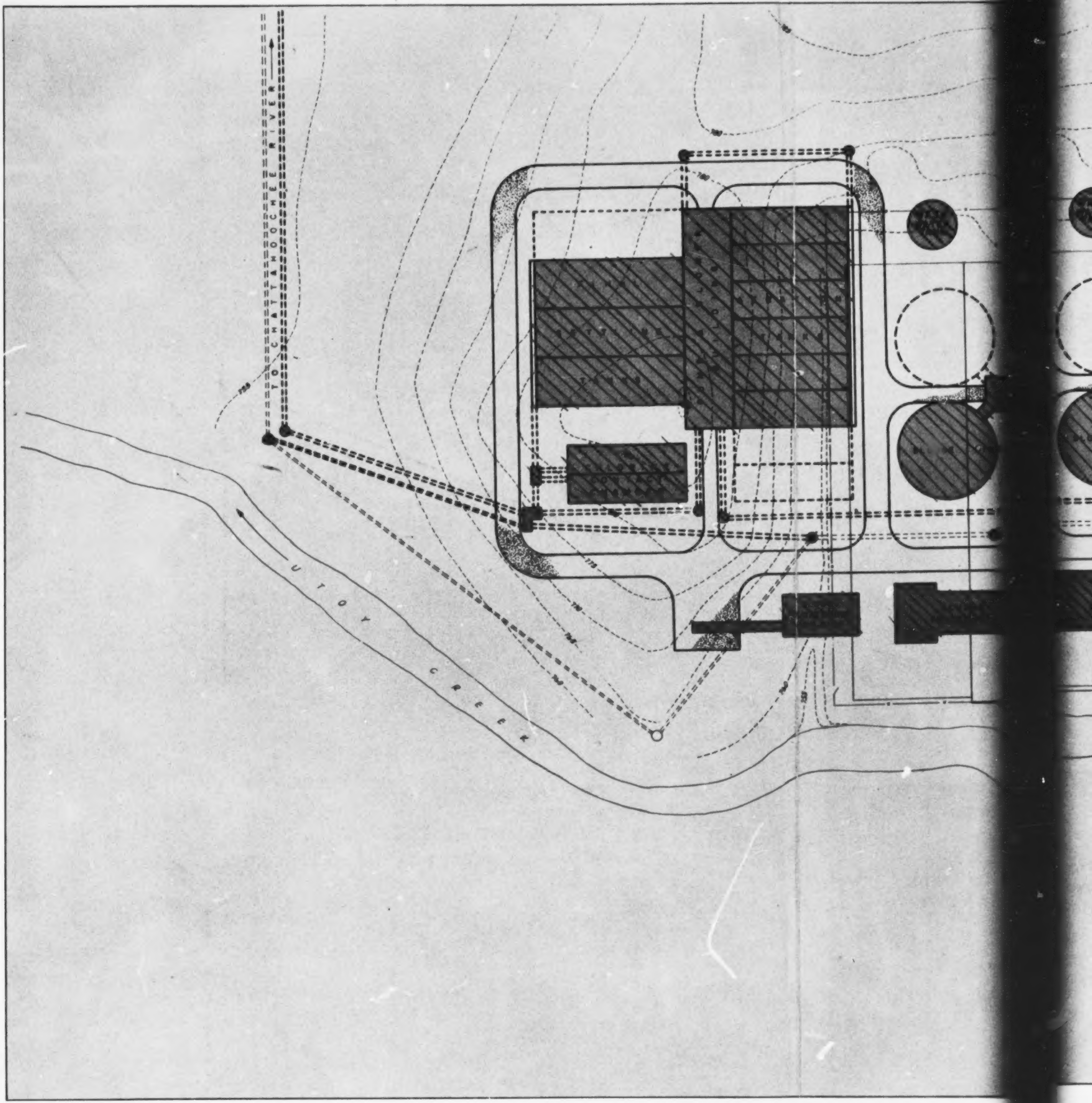
UTOY CREEK WATER POLLUTION CONTROL PLANT
EXISTING PLANT

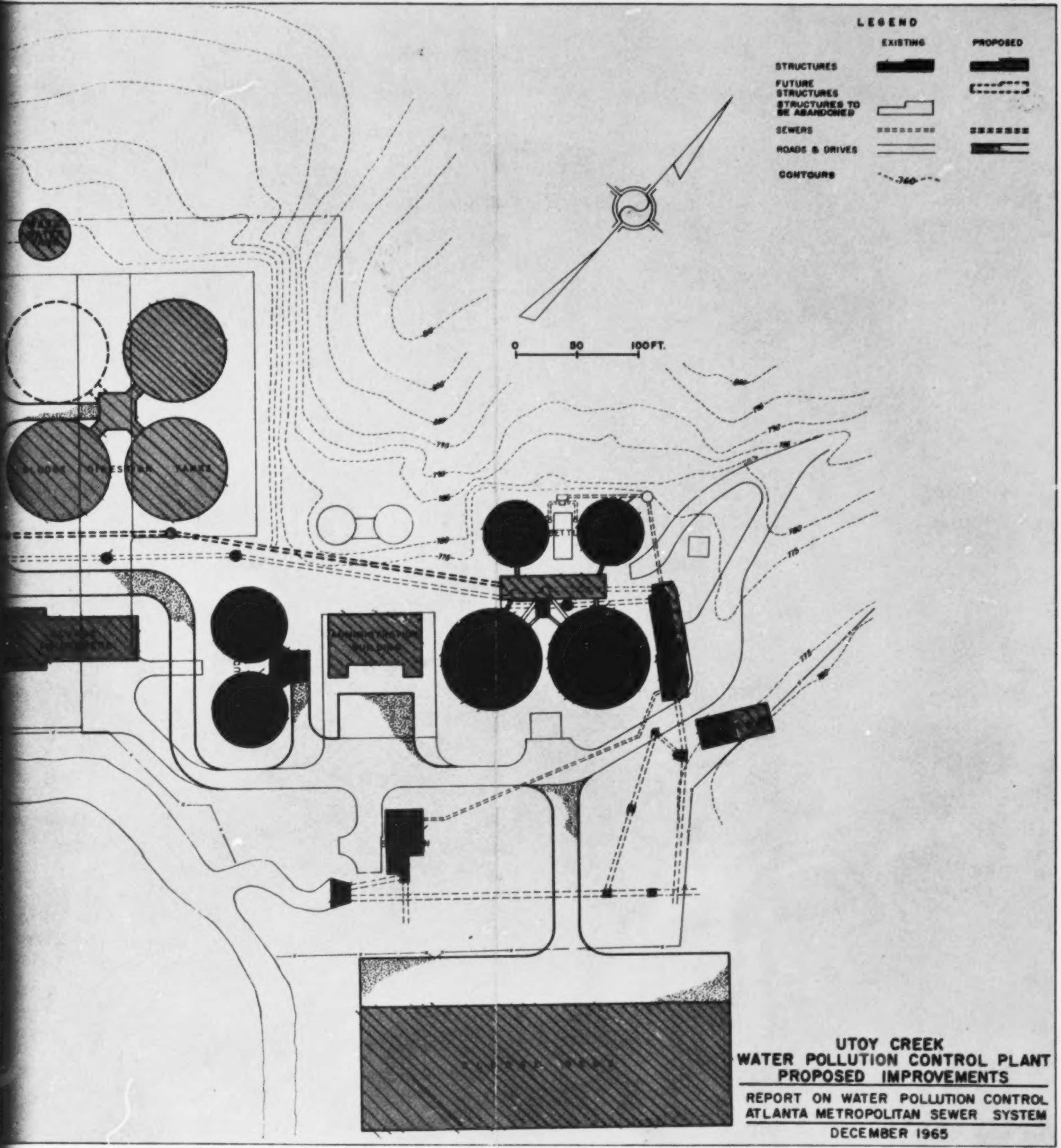
REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 12

416 a


TO CHATTAHOOCHEE RIVER
UTOY CREEK


LEGEND
EXISTING
PROPOSED
STRUCTURES
FUTURE STRUCTURES
STRUCTURES TO BE ABANDONED
SEWERS
ROADS & DRIVES
CONTOURS
760
0
50
100 FT.
SLUDGE DIGESTION TANKS
ADMINISTRATION BUILDING
SETTL
780
775
790
785

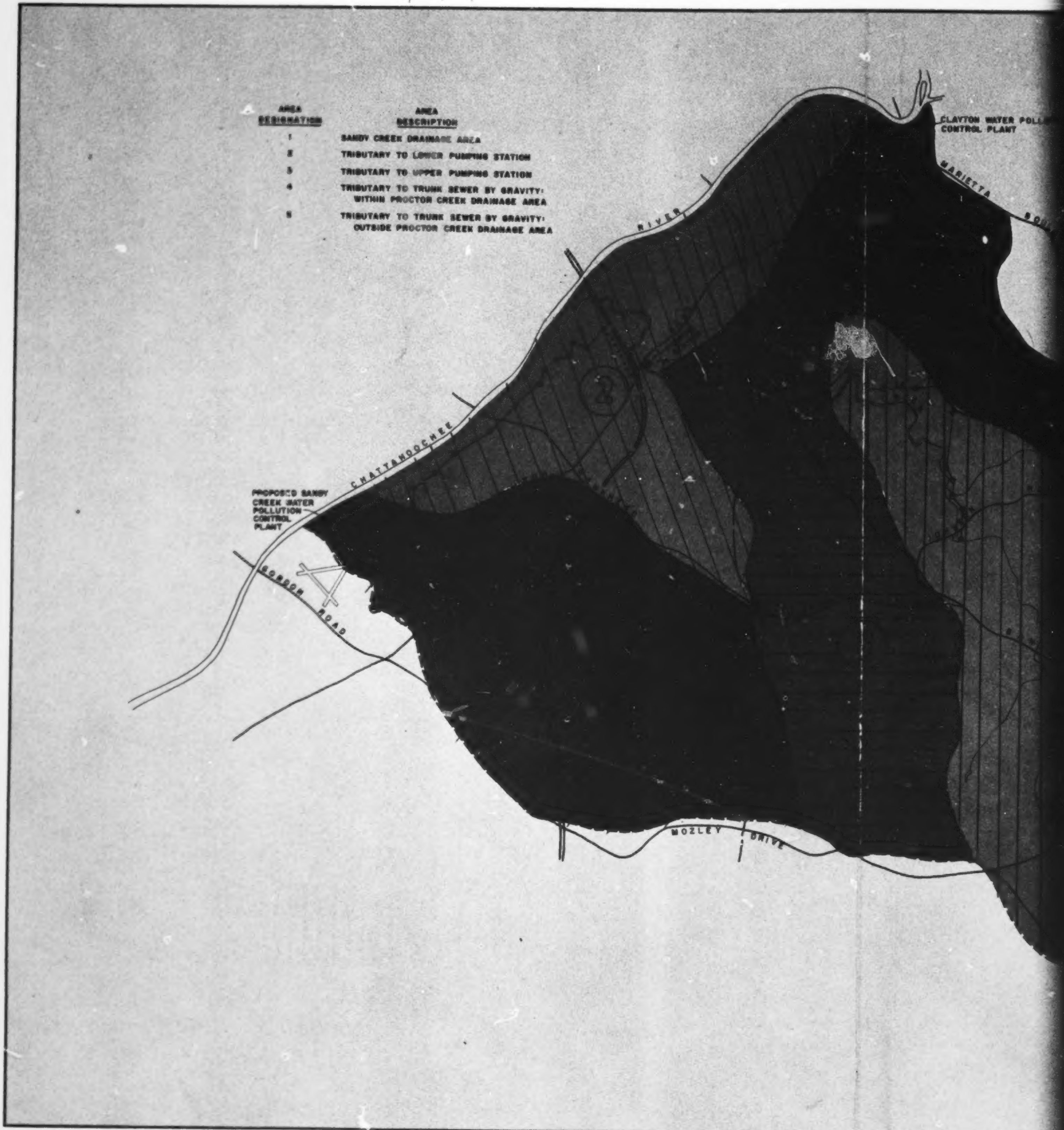
UTOY CREEK
WATER POLLUTION CONTROL PLANT
PROPOSED IMPROVEMENTS

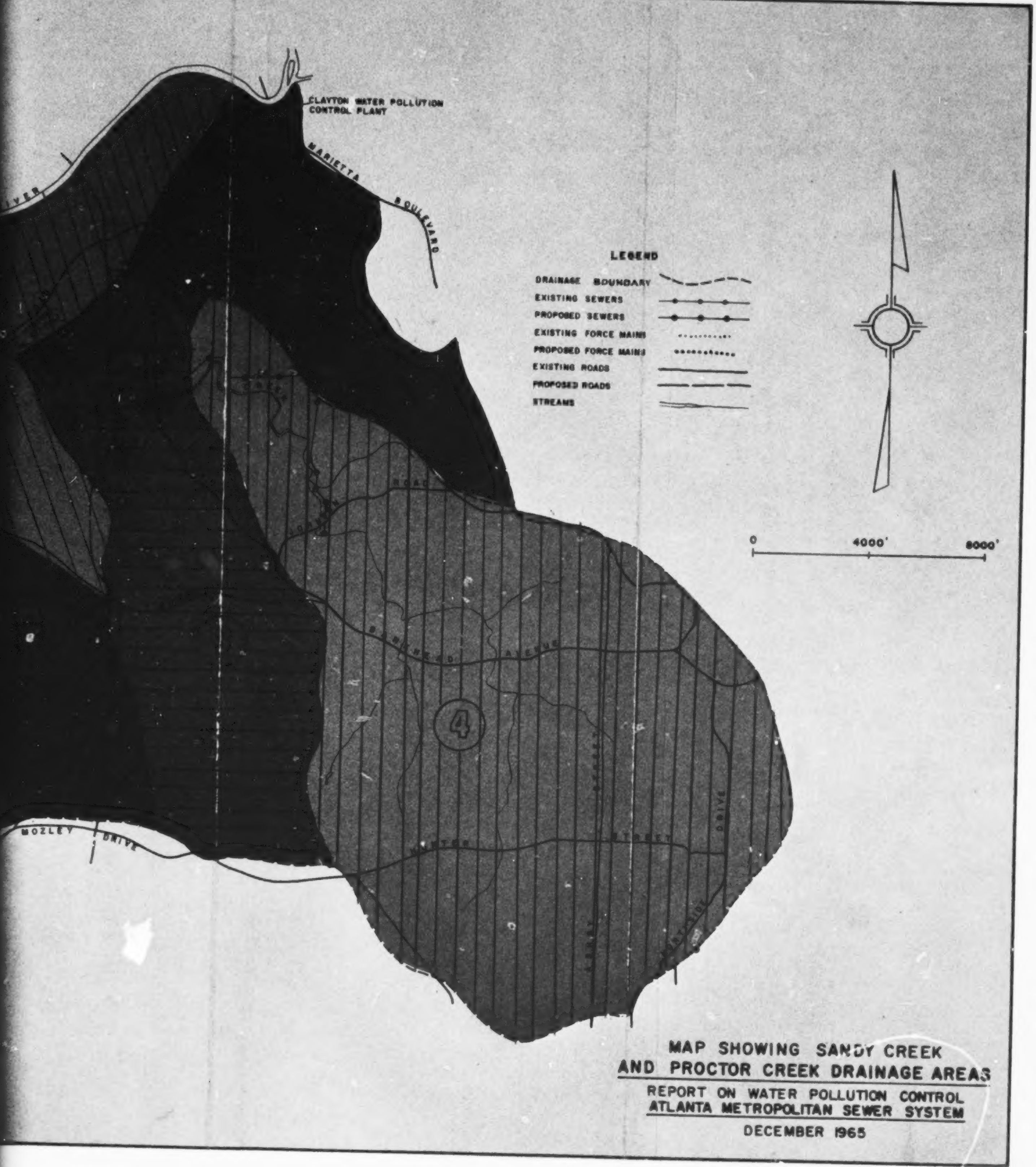
REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE 13

417 a


AREA DESIGNATION
AREA DESCRIPTION
1 SANDY CREEK DRAINAGE AREA
2 TRIBUTARY TO LOWER PUMPING STATION
3 TRIBUTARY TO UPPER PUMPING STATION
4 TRIBUTARY TO TRUNK SEWER BY GRAVITY: WITHIN PROCTOR CREEK DRAINAGE AREA
5 TRIBUTARY TO TRUNK SEWER BY GRAVITY: OUTSIDE PROCTOR CREEK DRAINAGE AREA
CLAYTON WATER POLL
CONTROL PLANT
MARIETTA
CHATTAHOOCHEE RIVER
2
PROPOSED SANDY CREEK WATER POLLUTION CONTROL PLANT
GORDON ROAD
MOZLEY DRIVE



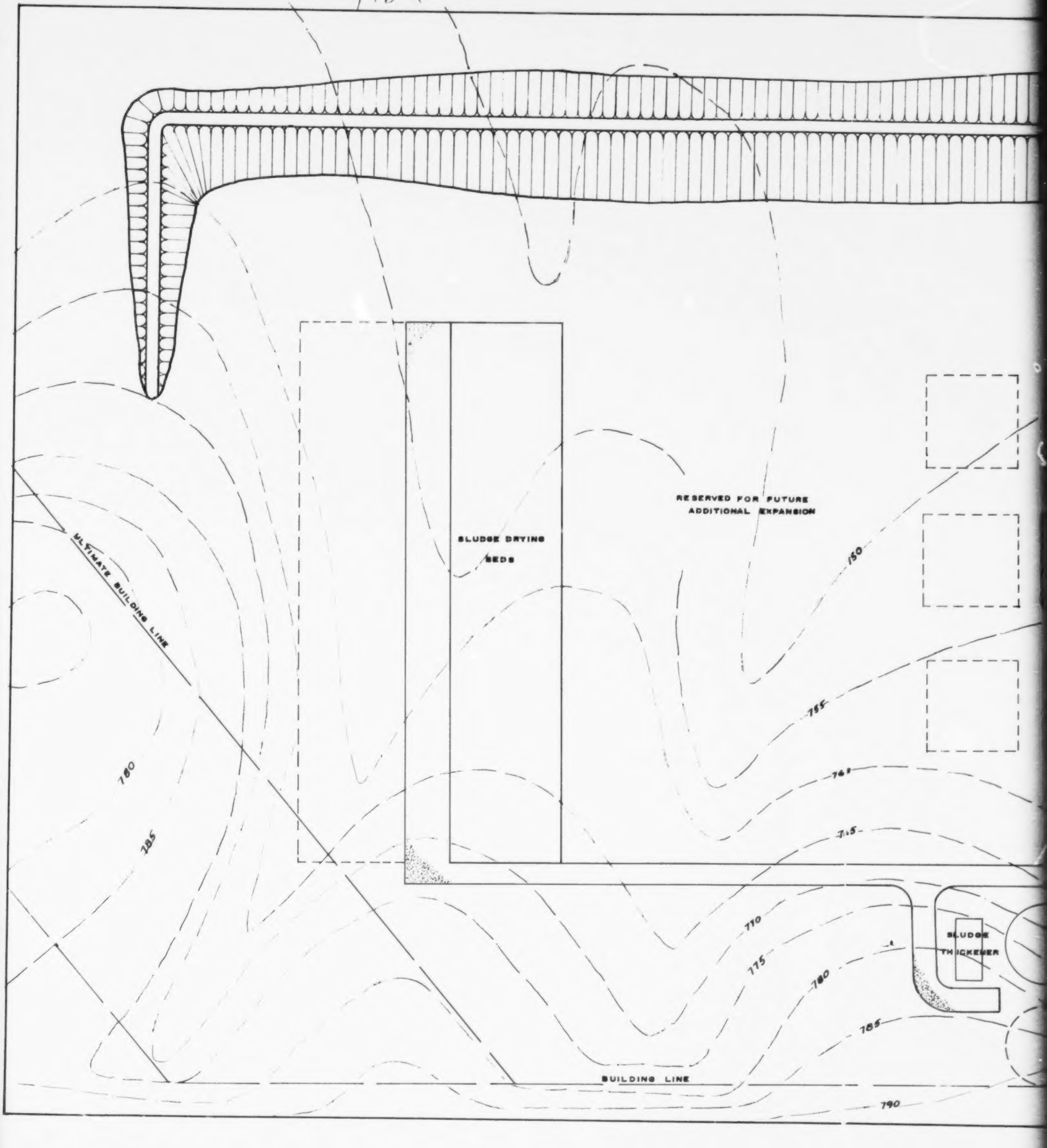
CLAYTON WATER POLLUTION CONTROL PLANT
MARIETTA BOULEVARD
RIVER
LEGEND
DRAINAGE BOUNDARY
EXISTING SEWERS
PROPOSED SEWERS
EXISTING FORCE MAINS
PROPOSED FORCE MAINS
EXISTING ROADS
PROPOSED ROADS
STREAMS
0
4000'
8000'
ROAD
AVENUE
4
MOZLEY DRIVE
STREET
DRIVE

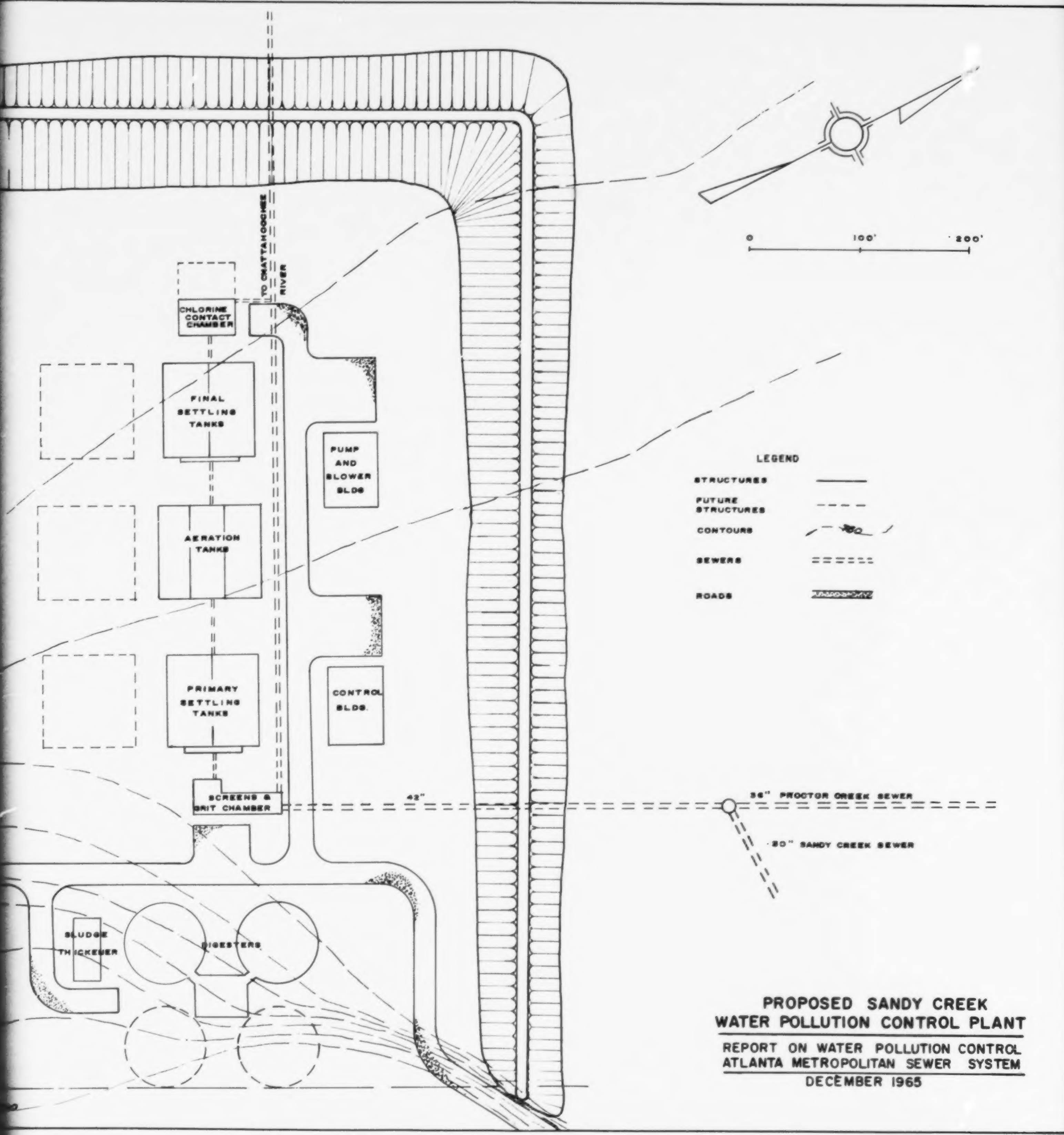
MAP SHOWING SANDY CREEK AND PROCTOR CREEK DRAINAGE AREAS

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 14

A18 a


RESERVED FOR FUTURE ADDITIONAL EXPANSION
SLUDGE DRYING BEDS
ULTIMATE BUILDING LINE
SLUDGE THICKENER
BUILDING LINE

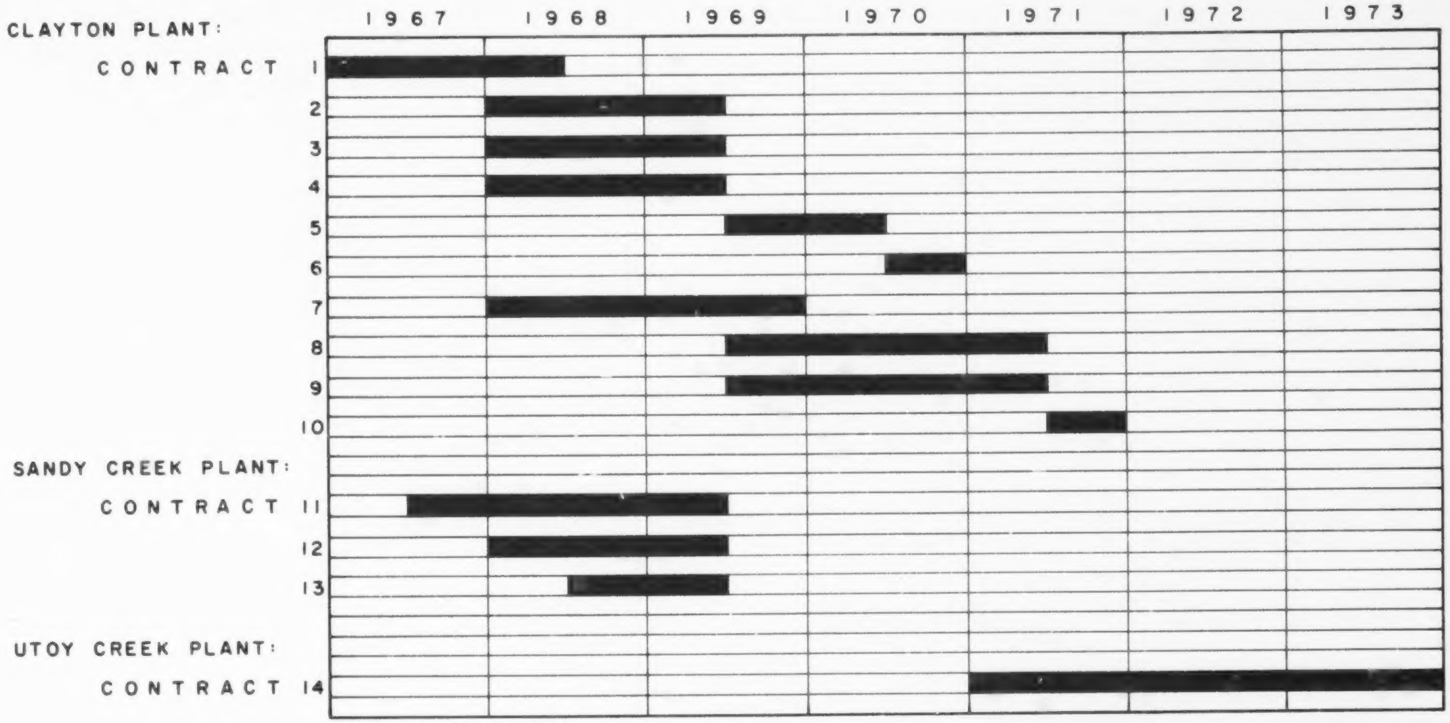

TO CHATTAHOOCHEE RIVER
CHLORINE CONTACT CHAMBER
FINAL SETTLING TANKS
PUMP AND BLOWER BLDG
AERATION TANKS
PRIMARY SETTLING TANKS
CONTROL BLDG.
SCREENS & GRIT CHAMBER
42"
36" PROCTOR CREEK SEWER
20" SANDY CREEK SEWER
SLUDGE THICKENER
DIGESTERS
0
100'
200'
LEGEND
STRUCTURES
FUTURE STRUCTURES
CONTOURS
SEWERS
ROADS

PROPOSED SANDY CREEK
WATER POLLUTION CONTROL PLANT

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 15

SEE TEXT FOR WORK IN EACH CONTRACT



DISTRIBUTION OF PROJECT COSTS FOR EACH YEAR OF CONSTRUCTION PERIOD

1967	1968	1969	1970	1971	1972	1973
$ 2,647,000	$ 12,158,000	$ 11,250,000	$ 6,871,000	$ 4,814,000	$ 1,600,000	$ 1,600,000

TOTAL PROJECT COST

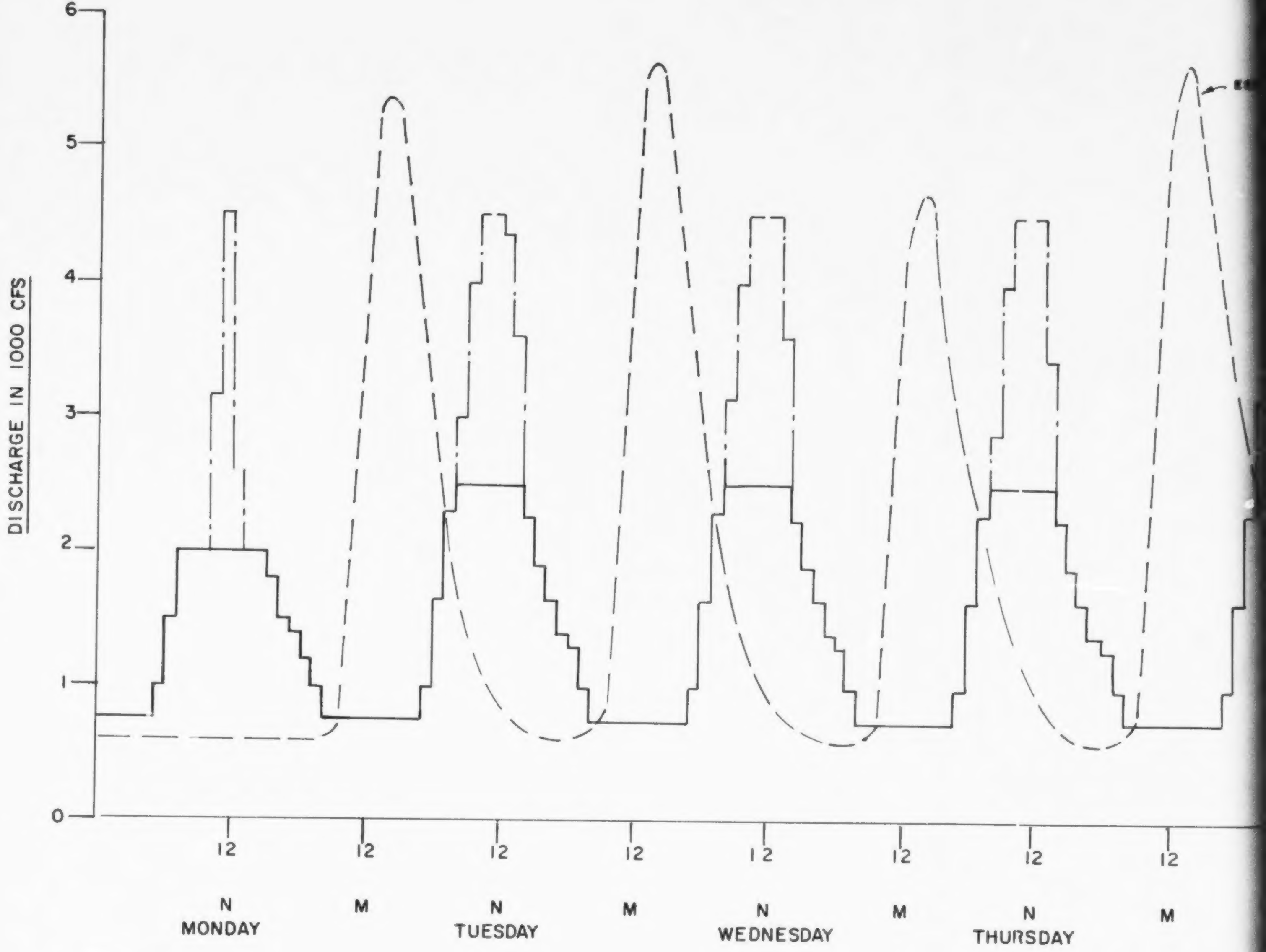
CLAYTON PLANT	$ 32,800,000
SANDY CREEK PLANT	3,340,000
UTOY CREEK PLANT	4,800,000
GRAND TOTAL	$ 40,940,000

PROPOSED CONSTRUCTION SCHEDULE

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE 16

420 A



INFLOW - DISCHARGE HYDROGRA

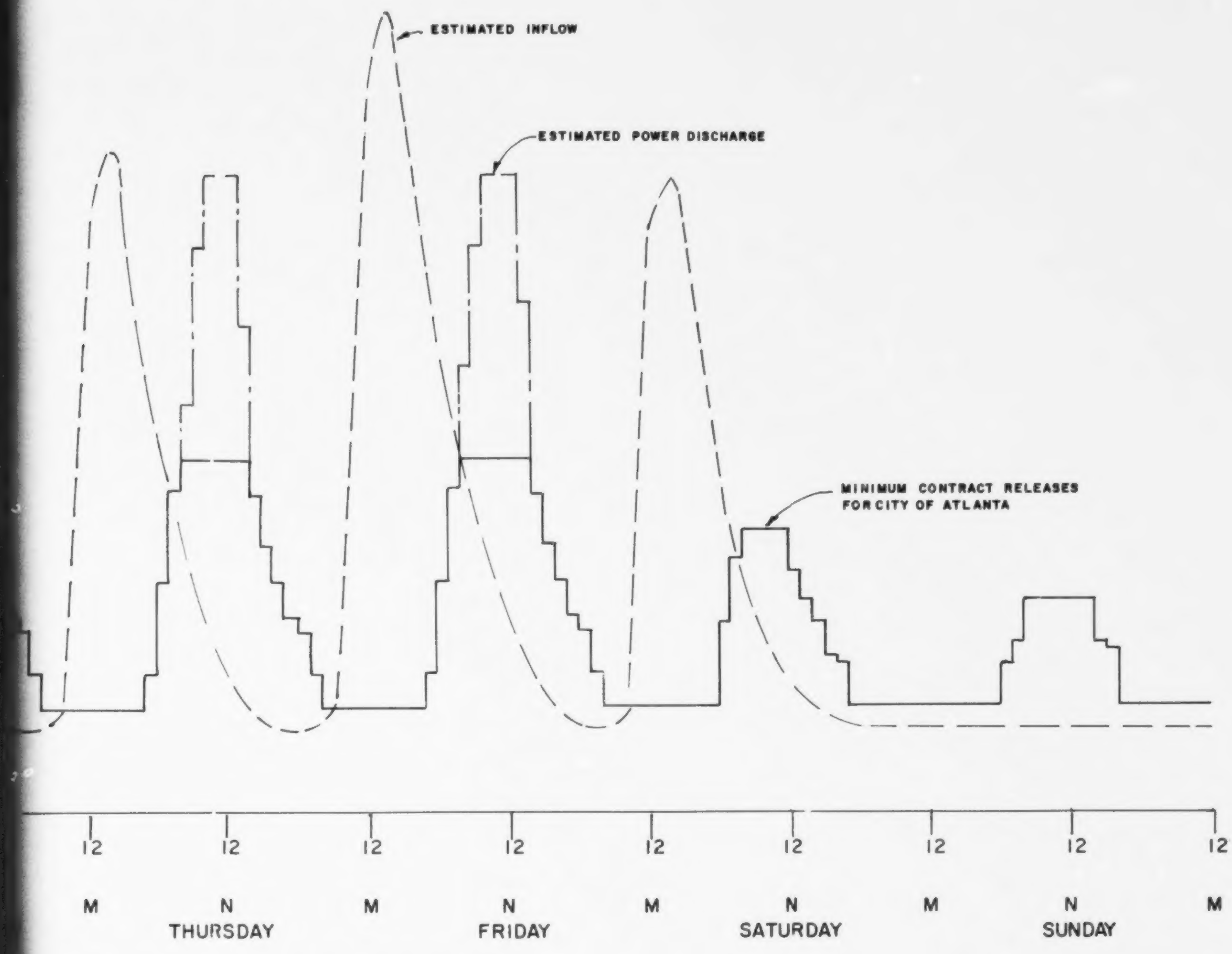
NOTE:

THESE RELEASES BASED ON THE FOLLOWING:

(A) INFLOW OF 1600 C.F.S. AVERAGE PER WEEK AND 600 C.F.S. MINIMUM WITH PATTERN SUBSTANTIALLY AS SHOWN

(B) STORAGE OF 3200 ACRE-FEET AS DETERMINED BY SURVEY MADE IN NOVEMBER, 1954

(C) SOURCE OF INFORMATION: EXHIBIT A - CONTRACT BETWEEN CITY OF ATLANTA AND GEORGIA POWER COMPANY DATED 7-23-57.

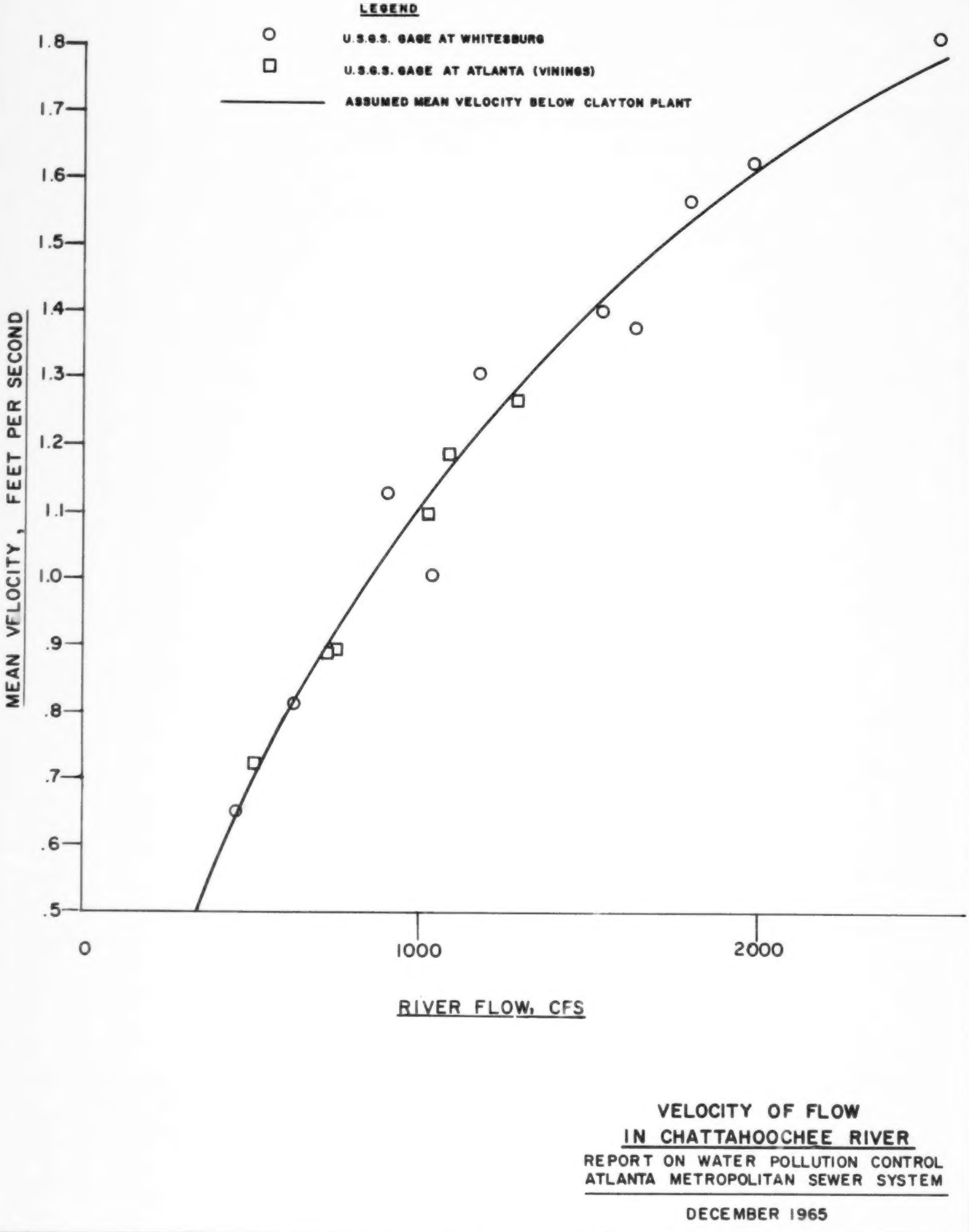


INFLOW – DISCHARGE HYDROGRAPH

INFLOW – DISCHARGE HYDROGRAPH
MORGAN FALLS DAM

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

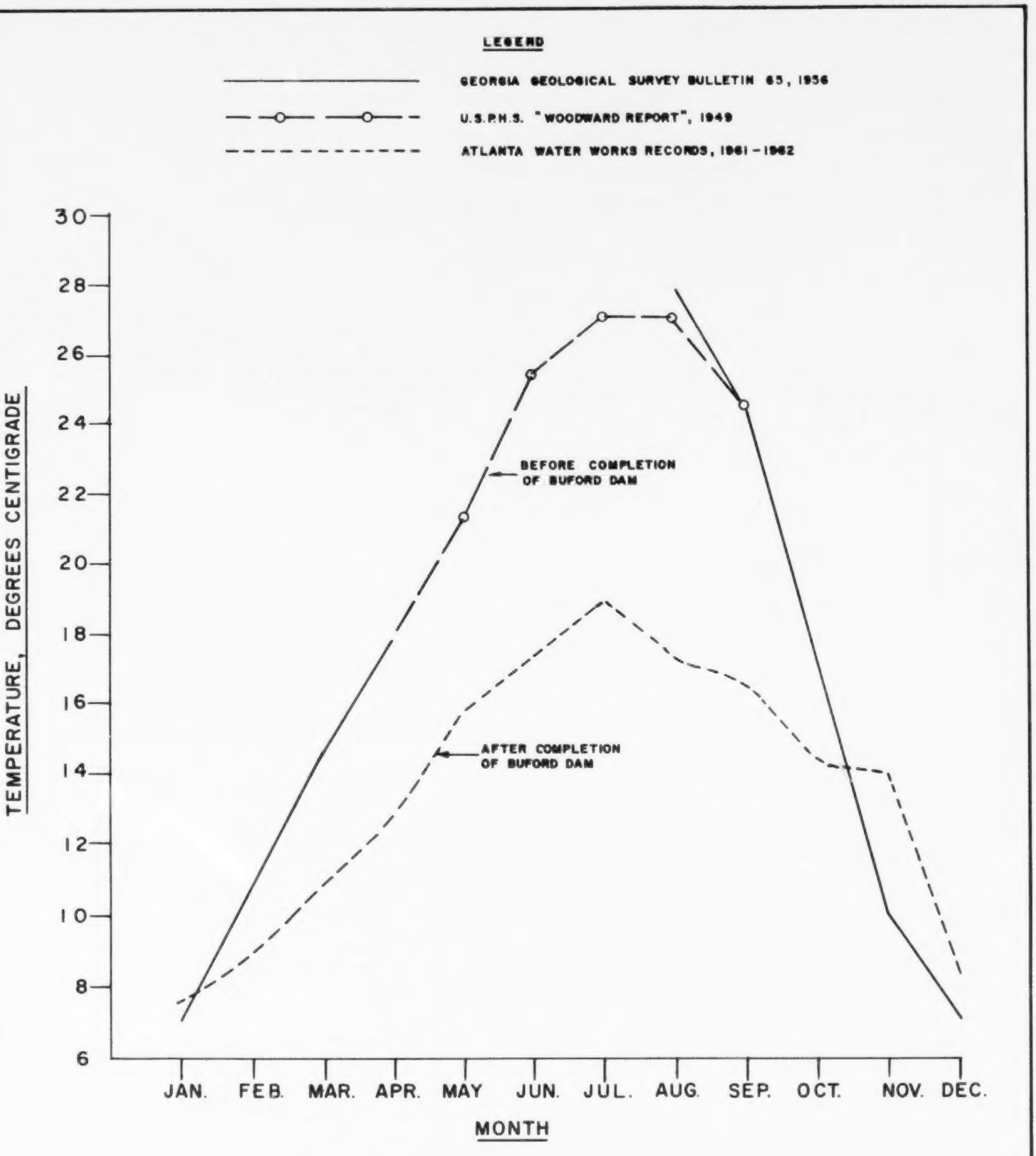


VELOCITY OF FLOW IN CHATTAHOOCHEE RIVER

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE A-2

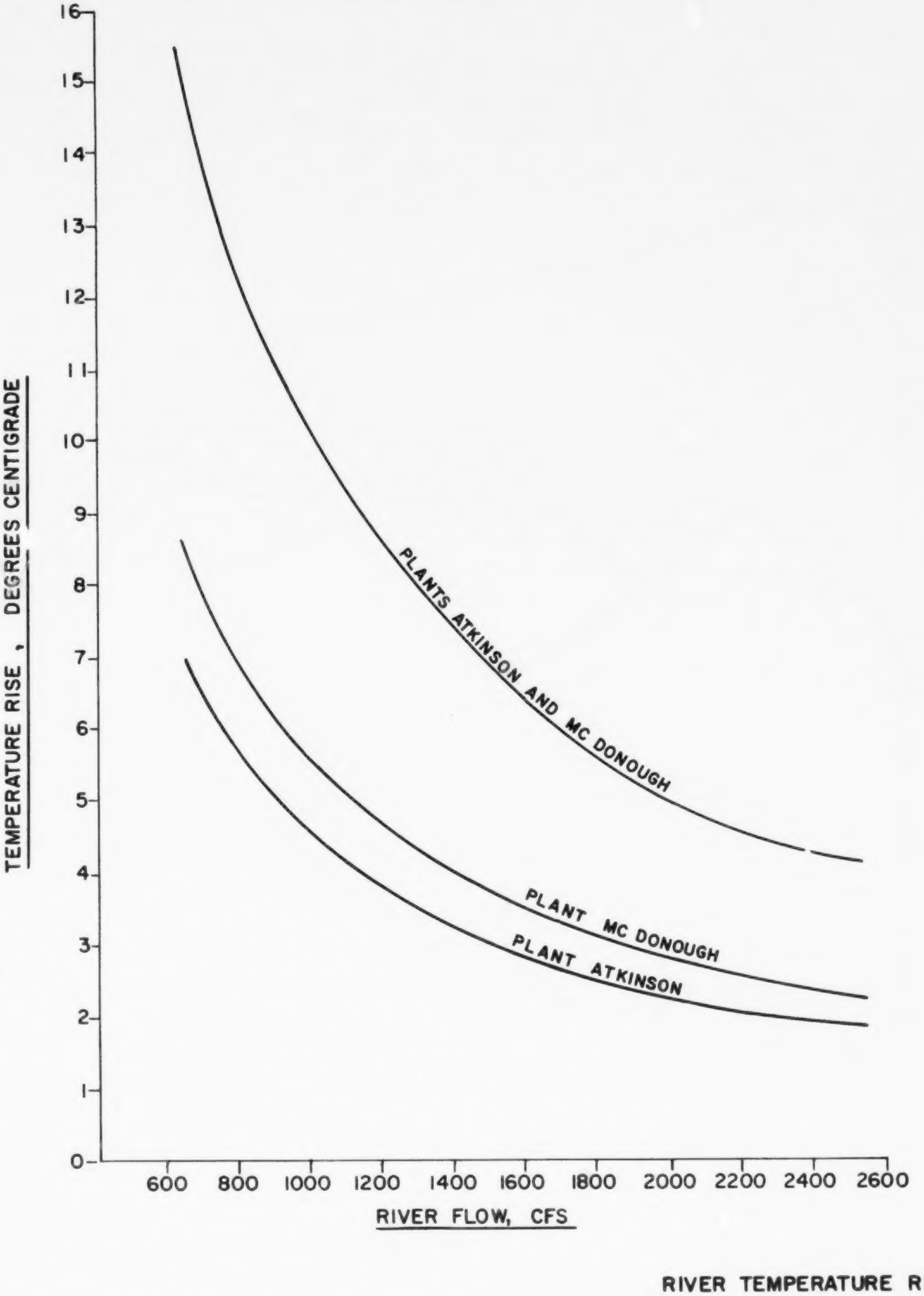


MEAN MONTHLY TEMPERATURE OF CHATTAHOOCHEE RIVER AT ATLANTA WATER WORKS INTAKE

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

DECEMBER 1965

PLATE A-3

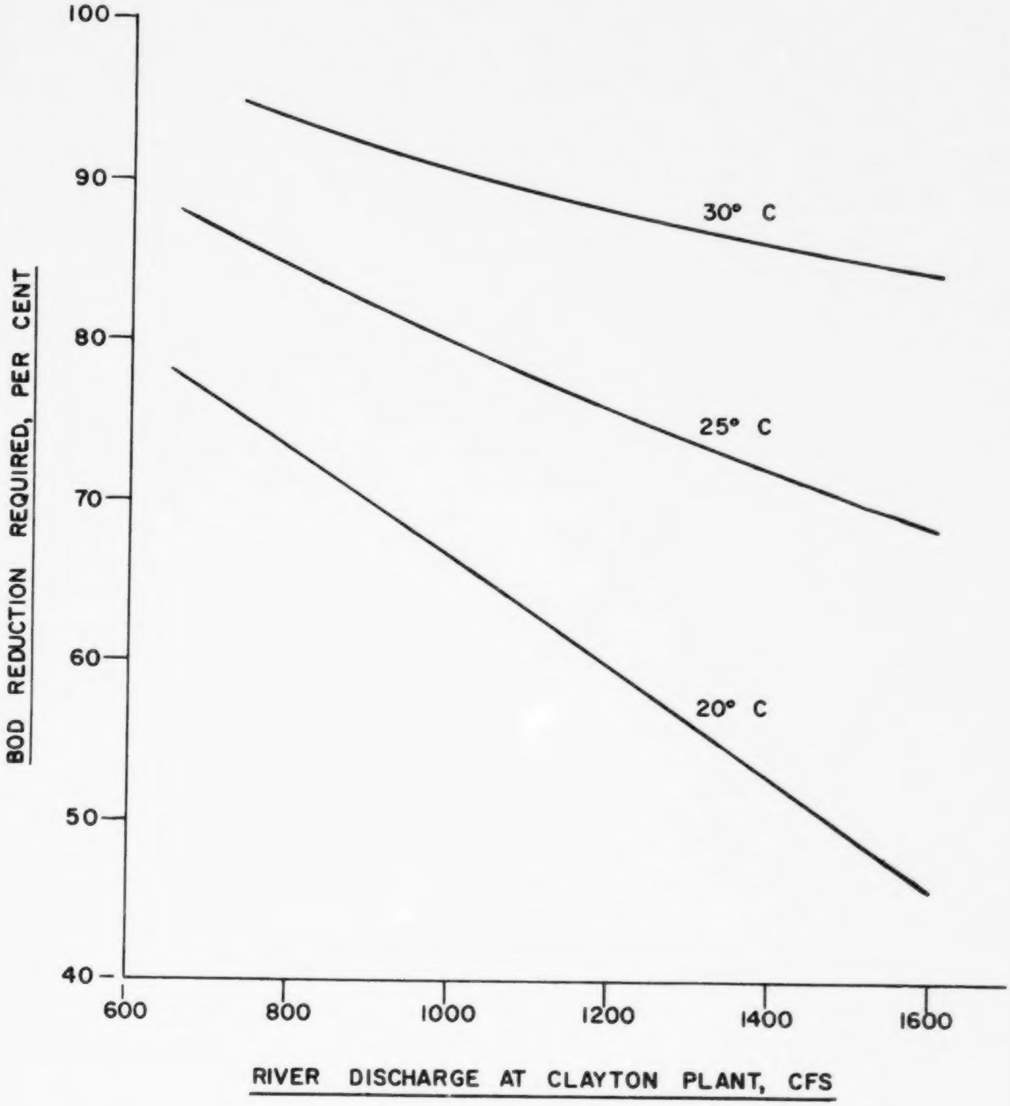


RIVER TEMPERATURE RISE
DUE TO POWER PLANTS

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM

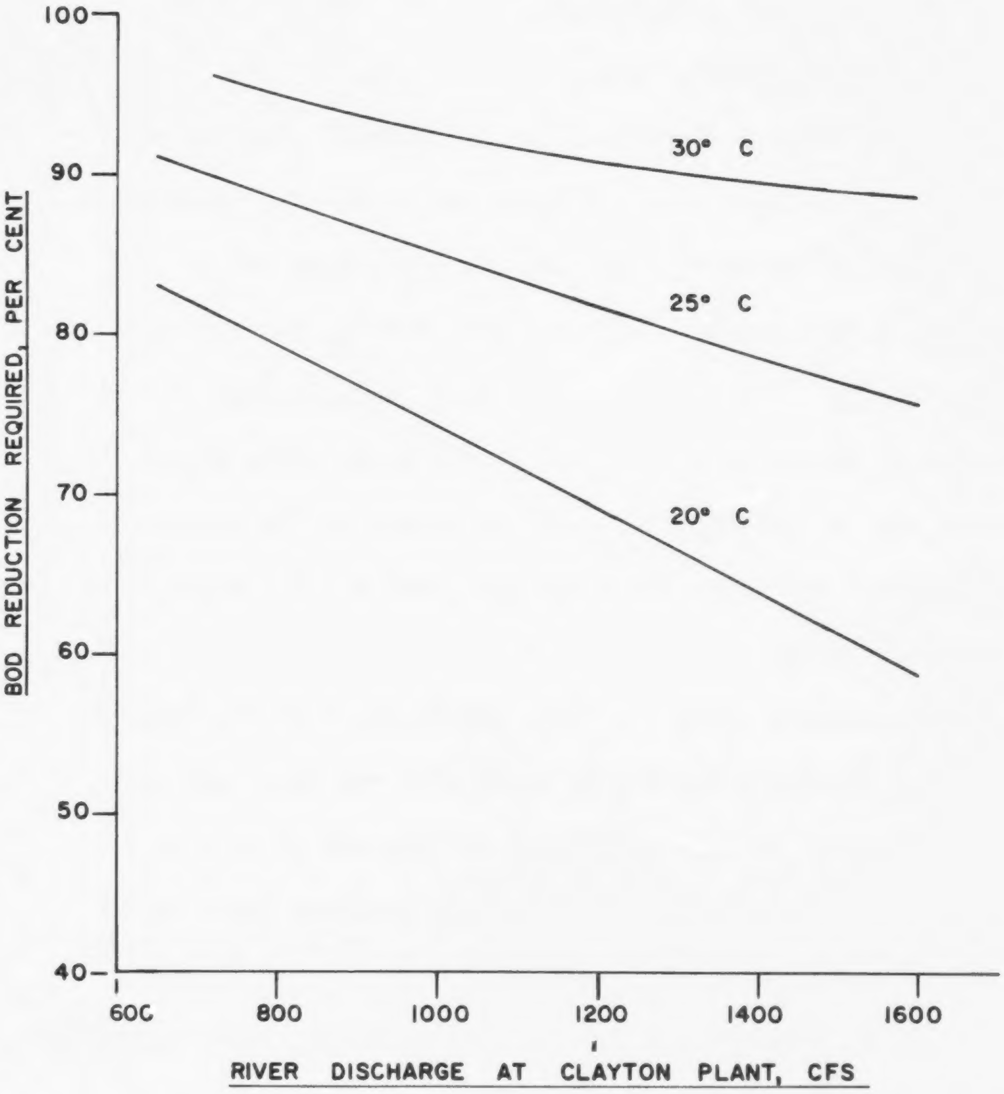
DECEMBER 1965

PLATE A-4



TREATMENT REQUIREMENTS
VS. RIVER DISCHARGE AND TEMPERATURE,
YEAR 1985

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965



TREATMENT REQUIREMENTS
VS. RIVER DISCHARGE AND TEMPERATURE,
YEAR 2000

REPORT ON WATER POLLUTION CONTROL
ATLANTA METROPOLITAN SEWER SYSTEM
DECEMBER 1965

PLATE B-2

CHAIRMAN STEIN: Thank you, Mr. Morriss.

Are there any comments or questions?

MR. HOWARD: I have one.

CHAIRMAN STEIN: Yes.

MR. HOWARD: I would like to comment that we recognize that there is a serious problem of thermal pollution below the City of Atlanta, and that it will have to be faced up to by the proper authorities. But it is not an interstate problem. It is an intrastate problem, and it is one that is going to have a serious effect on treatment facilities and degree of treatment required of the city. That matter will be considered and studied by the Water Quality Control Board.

The second thing is that the Georgia Water Quality Control Board unanimously passed a resolution some months ago calling on the State government to provide grants to match Federal grants for water pollution control facilities.

We have passed that resolution on to the Georgia Municipal Association, the County Commissioners' Association, and we hope that this coming Legislature will take some action.

We think that the case of water pollution ought to be faced up to just like highway construction, schools, and so forth. But it is a political matter that has to be settled by the Legislature.

CHAIRMAN STEIN: Thank you.

Are there any further questions or comments?

(No response.)

I would endorse what Mr. Howard said about the thermal pollution.

MR. MORRISS: Right.

CHAIRMAN STEIN: You recall I asked Mr. West that question this morning.* You understand that our jurisdiction just relates to interstate pollution -- pollution from one State endangering health and welfare of persons in another State.

MR. MORRISS: Yes, Mr. Stein, we understand that. Our only concern was that it was in the report, in the body of the report, but it went on to make no recommendation.

CHAIRMAN STEIN: Because we have no jurisdiction.

MR. MORRISS: Very good.

CHAIRMAN STEIN: Now, the point is that we can enter into this problem if the Governor of Georgia will request it. In Washington we are waiting for the first request from the Governor of Georgia for Federal action on an interstate case. I am not sure we are going to get it.

MR. MORRISS: I don't think so.

CHAIRMAN STEIN: The next point I think may be

*See page 109

a significant one. On your combined sewer problem, where you say at present there is no outside aid; may I suggest that you may want to consider our program in the FWPCA where we have $20 million a year for the next four years for demonstration grants. Milwaukee, Chicago, and several other cities have these programs.

I would not say "there is no Federal aid", but what aid there is available would not help you complete this tremendous program. But you may want to look at the Federal Law, check with your State representatives and our people in the area, because $20 million a year is still a sizable sum of money.

MR. MORRISS: Mr. Stein, we are aware of the demonstration grants, but we feel like a $200 million problem is not within the scope of demonstration. We need something to work on building a practical system and not to go out and build pilot models.

CHAIRMAN STEIN: No; we recognize that.

MR. MORRIS: Well, the $1 million limit you put on these projects doesn't recognize it.

CHAIRMAN STEIN: Again, you get the philosophy here. We presented this problem to the Congress, and obviously what happened was that other cities came up with cost figures comparable to yours. Many of the other cities wanted to embark on a Federal public works program of that magnitude.

They said they'd like to give you $20 million a year for four years to see if the cities can come up with ideas of putting up a demonstration where we wouldn't have to go to this full-scale separation.

Now, Chicago, for example, has come up with a notion of underground caverns.

Now, there is money available for that.

You may well be committed to this $100 million.

You know, Mr. Howard is fond of talking about the Potomac all the time. But we faced this problem in Washington, D.C. when we put in the new sewage treatment plant. We thought it would cost $300 million to provide separation. At least, Metcalf and Eddy in New England, the consulting engineers, did. Of course, being an old bureaucrat, it didn't scare me very much. $300 million didn't scare us very much.

But the problem here of ripping up the city and not being able to run an automobile through it for 15 years did.

We came up with a proposal to build a tremendous interceptor sewer at the cost of about $75 million, which would alleviate the stormwater overflow and cut this down to a real minimum. By next year we expect to have that completed.

Now, there may be some notion of that which could be a cost-cutting operation that you might want to consider. But this is not just money for demonstration grants, but money for demonstration grants to meet this specific problem.

MR. MORRISS: With a $1 million limit --

CHAIRMAN STEIN: No, not on the stormwater.

MR. MORRISS: This was the impression we got in discussing the matter with the local agency.

CHAIRMAN STEIN: No sir. No sir. I would suggest you may want to look at that problem again.

MR. MORRISS: Well, the statement was really that there was no direct program specifically for this problem, and I think this --

MR. HOWARD: Murray, may I remind you that you only have eight more years to get the Potomac cleaned up.

CHAIRMAN STEIN: You keep bringing this up. (Laughter)

MR. MORRISS: The HUD Act certainly provides in a left-handed way an approach to separation, and so do some of the existing laws which we have discussed here today. But none of them directly applies and relates except, as you say, this demonstration grant, which we had taken more as a demonstration project than as a realistic approach in solving a $200 million problem.

Instead of one interceptor, we need 16.

CHAIRMAN STEIN: Right.

MR. MORRISS: Very good.

CHAIRMAN STEIN: Thank you.

Mr. Howard.

MR. HOWARD: I would like to ask Mr. Thomas King from Columbus to come up and give us a presentation.

STATEMENT OF
THOMAS KING, ON BEHALF OF
BOARD OF WATER COMMISSIONERS,
CITY OF COLUMBUS, GEORGIA

MR. KING: Mr. Chairman, I am Thomas King from Columbus, Georgia, representing the Board of Water Commissioners of the City of Columbus, Georgia.

I would like to outline to you briefly our program and what we have done and also bring you up to date on what we are doing.

In May 1965 the South Columbus Treatment Plant, with a capacity of 25 million gallons a day, was placed in operation. At various dates since that time, interceptors have been completed to bring additional waste to this plant. This includes the principal city interceptor that connects numerous outfalls to the system that at one time discharged raw waste into the river and other streams.

This interceptor and outfall program is proceeding with three active contracts and two now in the design stage. This is to be followed at frequent intervals by other contracts looking forward to completion of the collection system program in 1968.

The North Columbus Treatment Plant is approximately 80 per cent complete, and it is expected that this plant will go into operation during the fall of 1966. This plant would treat wastes from an outfall now discharging raw sewage into the river and, with the outfall contracts now under construction and scheduled, will complete collection and treatment of all municipal waste going to the river.

All principal industries contributing waste to the river have arranged to connect to the waterworks interceptor system except one, and a study is being made by this industry now to determine the most feasible method of treatment for its waste. A development in a drainage area not previously developed is being constructed in Southeast Columbus, and a separate treatment plant will be provided for this development, with completion scheduled in 1967.

A few homes are being constructed in an area north of the presently served area that will require a separate treatment plant of a temporary nature. The outfall lines to serve this area are in our present program but cannot be scheduled until after these homes are occupied.

This temporary plant will serve this development until the outfalls to connect it to the North Columbus plant are completed, scheduled for 1968 or early 1969.

The above-described program of work completed, under construction and scheduled for approximately two more years has required the expenditure of $10 million of waterworks capital funds, with supplemental Federal grants of $850,000 and also considerable funds provided by private developments.

This commitment of funds has presently exhausted the bonding capacity of the Board of Water Commissioners. This Board has no taxing authority and must rely solely upon revenue from water and sewage charges as a source of income for all purposes, including operation, maintenance and debt service.

Present debt service is approximately $1 million annually, incurred largely by the sewage system improvement program.

With this heavy bonded indebtedness, it is difficult to predict when additional bonds will be marketed for a further improvement program, due to the many indefinite factors involved and the uncertainty of economic conditions.

Based on normal growth, a reactivation of Fort Benning to approximately its full capacity and the availability of State and Federal grants for approximately 50 per cent of construction costs, it is estimated that a complete financial feasibility study can be made in early 1970's for financing a new program.

Should this study be favorable, a new program could be undertaken at that time which could include additional treatment facilities at the South Columbus Plant that could be completed during the year 1973.

In the meantime, to improve the quality of the river below Columbus, the waterworks will continue to practice chlorination of the South Columbus Plant effluent with facilities already available for this purpose. Chlorination will also be practiced at the other treatment plants as a safety factor.

CHAIRMAN STEIN: Thank you, sir.

Are there any comments or questions?

(No response.)

If not, thank you very much for your complete statement of your views.

Mr. Howard.

MR. HOWARD: Is Mr. Bob Sutton here? Mr. Sutton is representing Cobb County, City of Smyrna, City of Marietta, and City of Austell. He represents Hensley-Schmidt Engineers.

STATEMENT OF

ROBERT SUTTON, REPRESENTING COBB COUNTY, GA., AND THE CITIES OF SMYRNA, MARIETTA AND AUSTELL, GA.

MR. SUTTON: Mr. Chairman, I am Bob Sutton, and I am representing, as Mr. Howard said, Cobb County, Georgia, the City of Marietta, the City of Smyrna, and the City of Austell, located in Cobb County.

I would like to read you a letter from Mr. Ernest Barrett, the Chairman of the Board of Commissioners for Cobb County, which was submitted to Mr. Howard a little late to get into his report, if you will allow me to do this, please.

"Dear Mr. Howard:

"Our consulting engineers, Hensley-Schmidt, Inc., advises us that the county-wide sewer report is approximately 50 per cent complete and should be completed in October of this year. Our schedule of construction will be based on this report.

"We have already initiated applications for P.L. 660 and HUD Grant money, and will begin construction as soon as this money is available in the South Cobb area referred to as the Austell-Mapleton area and the Nickojack Creek-Oakdale area.

"The next proposed area will be the Sope Creek area followed by the Rottenwood Creek area, and, providing the money is available, the construction time is anticipated to be from two to six years.

"We appreciate any aid financial-wise that your Board can give us."

Backing up just a minute. Cobb County has an authorization to make a county-wide sewer study, and this is in progress now, as indicated by his letter. His letter indicates the progress and the anticipated progress in Cobb County.

The City of Marietta is proceeding now with design for tertiary treatment on their existing plants.

The City of Austell, as indicated in the Commissioner's letter, has requested that the County come in and take over their problem and help them work it out, so it would be in conjunction.

The City of Smyrna has plans scheduled as soon as money becomes available for this to relieve the problem in the Bohannan Creek area and to proceed in that manner.

As you can see, Mr. Chairman, our basic problem in Cobb County is money.

Thank you.

CHAIRMAN STEIN: That is a unique position. (Laughter)

Are there any comments or questions?

(No response.)

If not, thank you very much for the statement, sir.

MR. SUTTON: All right, sir.

MR. HOWARD: Is Mr. Randolph Goulding here?

MR. GOULDING: Yes sir.

MR. HOWARD: Mr. Goulding will speak for the City of Fairburn, from the consulting engineers of Jordan, Jones and Goulding.

STATEMENT OF

RANDOLPH GOULDING, REPRESENTING THE MAYOR AND THE COUNCIL OF THE CITY OF FAIRBURN, GA.

MR. GOULDING: Mr. Chairman, I am Randolph Goulding, representing the Mayor and Council of the City of Fairburn.

Just a brief report on what Fairburn is doing to alleviate their problem. We now have in existence two plants that are overloaded, one of which is tributary to the Flint River, the other to the Chattahoochee River. They now have provided their portion of the money, and they have made application through the Water Quality Control Board for a grant and are now waiting for a grant to proceed with the construction of new plans to alleviate these problems.

They are asking for a grant of $134,700, and we hope to have this money shortly.

But this is an indication of what many of the small cities, through their own desires and through the help of our Water Quality Control Board, are doing to alleviate these problems. And with the aid of money, as everyone has indicated is needed, they will do so.

Thank you, sir.

CHAIRMAN STEIN: Thank you very much.

Are there any comments or questions?

(No response.)

If not, thank you very much.

MR. HOWARD: Is Mr. Mills here?

MR. MILLS: Yes.

MR. HOWARD: Mr. Mills is representing the City of Newnan.

STATEMENT OF

RALPH MILLS, REPRESENTING

CITY OF NEWNAN, GA.

MR. MILLS: Mr. Chairman, ladies and gentlemen, as Mr. Howard has just told you, my name is Ralph Mills. I am with Wiedeman and Singleton, Engineers, of Atlanta, representing Newnan, Georgia as their consulting engineers.

We have submitted to the Georgia Water Quality Control Board, through Newnan, a schedule of pollution abatement which I understand has been presented by the

Board as a matter of record, so I would assume there is no need to repeat that in this meeting.

Every effort will be made to follow this schedule, but the big hurdle will be tremendous and the availability of Federal funds for the project.

CHAIRMAN STEIN: Thank you very much.

Are there any comments or questions?

(No response.)

Thank you.

MR. HOWARD: Mr. W. J. "Bill" Greene, from Wiedeman and Singleton, Engineers, representing the City of Douglasville and the City of Hogansville.

STATEMENT OF
W. J. GREENE, REPRESENTING
THE CITIES OF DOUGLASVILLE
AND HOGANSVILLE, GA.

MR. GREENE: Mr. Chairman, I am William J. Greene, partner in the engineering firm of Wiedeman and Singleton, speaking in behalf of Hogansville first.

They have received a grant this year for 30 per cent. The field surveys have been completed, and they are now in the process of making one change, acquiring one piece of property in connection with their waste stabilization pond. Then they will be able to proceed in the next few months with actual construction.

In connection with that, the city has agreed to take in the industrial waste with one minor exception which the industry has agreed to take care of itself in view of the fact that the city will be using a waste stabilization pond rather than a sewage treatment type plant.

In the case of Douglasville, the city has for many years been interested in sewage treatment, but, like a lot of small cities, it has found that the cost has been rather prohibitive.

However, with the growth of Douglas County, and being only 25 miles from the center of the city, they know they have got to do something, and they are ready to go ahead.

Land is a problem in the vicinity of metropolitan Atlanta, and they have had to move further downstream on Anneewakee Creek, on which the plant will be constructed, which is a tributary to the Chattahoochee River. They are in the process now of securing an option for that piece of land.

Once it is secured, then we will make a final estimate of cost, and then the city will file an application to the State Water Quality Control Board for a 30 per cent grant from the Federal Water Pollution Control Administration, after which, upon receipt and arranging their financing, they will be able to proceed with construction.

CHAIRMAN STEIN: Thank you.

Are there any comments or questions? Mr. Rogers.

MR. ROGERS: I think we have already spent Georgia's grant here for two or three years.

MR. HOWARD: I think Atlanta spent it a while ago.

MR. ROGERS: Specifically, I wanted to ask this question: In the case of Hogansville, will this take care of all their waste, including the septic tank, now?

MR. GREENE: Yes. There will be an interceptor down in Yellow Jacket Creek that will pick up all of that, including the industrial load, except in the one case which will require a couple of holding ponds by the mill itself.

MR. ROGERS: Can you give us any time schedules on Hogansville and Douglasville? Or finances?

MR. GREENE: I haven't talked to them in the last couple of weeks. As soon as they get this land title cleared up for the pond, they will be able then to move right away and let contract within the next, say, 90 days. This is Hogansville.

As to Douglasville, based on the best thinking, there would probably be a financial problem involved there due to the cost and the rising cost of construction of sewage treatment facilities. Whereas before in this area we had a $40 per capita cost ten years ago for a sewage treatment plant, now it runs, in the one case of the Fulton County, nearly $100 per capita. In areas close by it is running anywhere from $65 up.

Only recently we had a plant out-of-state that wanted $88 per capita.

So that poses a problem on any city of 4,000 people which is planning in a rapidly growing area, and with an interstate highway between Atlanta and Birmingham soon to be completed.

It poses a financial problem in the case of Douglasville. Even possibly with a 30 per cent grant, they will probably undoubtedly have to resort to loans from the Federal Government, which are more lenient than the local bonding houses.

I would say, Mr. Rogers, it would be 1970 at the earliest before they can complete, and maybe later.

CHAIRMAN STEIN: Thank you.

Are there any further comments or questions?

(No response.)

MR. HOWARD: Mr. John W. Henderson, a member of the City Council from West Point.

STATEMENT OF

JOHN W. HENDERSON, CITY COUNCILMAN,

CITY OF WEST POINT, GA.

MR. HENDERSON: Mr. Chairman, I am a councilman from the City of West Point. The City of West Point, Georgia concurs in clearing up of the Chattahoochee and has, in fact, already taken preliminary steps leading toward the elimination of its own pollution of the river.

As previously indicated, an agreement has been entered into with West Point-Pepperell whereby raw sewage can be delivered to their proposed plant for treatment.

However, we have the problem of providing the system to deliver the raw sewage to the treatment plant and of correcting the problems existing in our present sewer lines.

Engineers have been employed by the City to make the studies and recommendations on the system.

We are a small town of less than 5,000, and our location on either side of the Chattahoochee compounds our problems and our costs.

Two or more pumping stations will be required. Lines must be laid under the river to deliver this sewage from the eastern portion of the town to the plant. The portion of the town lying on the west side of the river has combined sanitary and storm sewers which must be separated, and this is aggravated by this section being our shopping center.

All this means a cost which is prohibitive for a town the size of West Point, even considering Federal funds of 30 per cent, which we understand may not be available to us for several years.

Therefore, my plea is Federal and State agencies consider any possible means of assistance in financing of such undertaking.

I think this is important, not only to the City of West Point, but to the other small towns represented on the Chattahoochee.

Thank you.

CHAIRMAN STEIN: Thank you, sir.

Are there any comments or questions?

(No response.)

If not, thank you. I would suggest you and the other towns that have looked at this consider, as I indicated to you -- and we don't want to anticipate this -- the Senate yesterday just passed a bill raising our authorization for these purposes to $6 billion over the next six years or so. A similar bill is before the House. In order words, the situation may be materially changed if the legislation goes through this session.

Mr. Howard.

MR. HOWARD: In connection with that, Murray, I would say that at the present time the Georgia Water Quality Control Division has applications for over $10 million in grants. As far as we can understand, we will only get about $3.25 million for this fiscal year. So you see the kind of situation we are in, and we are all crying the same story.

CHAIRMAN STEIN: I know. And I want to say this: When Atlanta was up, they had the same proposition that a lot of other cities have. You see, they say, "Why doesn't the State of Georgia help out a little with the money?"

There is one thing I will say about Atlanta. Although you are asking Georgia for the money, under the American system they did put you on the agenda and you did make the plea. But the plea of the Mayor of Atlanta which was read here, which was echoed by the other cities, is what is being said over and over again by many of the municipal interests in the country.

I think we all recognize that the key to this problem is financing, but this is a problem we can't let hang too long, because the job doesn't get done. We have to have a reasonable schedule and try to clean up the river. Because if we let it lag too long, more and more people are going to come in, you are going to need more money, and we will never get ahead. It is a lot less expensive to do it now than it will be if we let this wait until the future.

Mr. Howard.

MR. HOWARD: Is Mr. John Temples here representing the City of Palmetto and the City of Grantville?

MR. TEMPLES: Yes.

MR. HOWARD: Mr. Temples is with Mr. J. B. McCrary Company, Engineers.

STATEMENT OF

J. H. TEMPLES, REPRESENTING THE

CITIES OF PALMETTO AND GRANTVILLE, GA.

MR. TEMPLES: Mr. Chairman, ladies and gentlemen, speaking on behalf of the City of Palmetto and also the City of Grantville, we have been employed as their engineers, and the necessary surveys, investigations and studies are now under way. They have not been completed, but they should be completed within the next 60 to 90 days for submission and review to the Georgia Water Quality Control Board.

There again we feel sure that we are going to encounter the same problem with each of these towns that we experience with all towns in so far as financing is concerned.

Now, I have contacted both the Mayors and the Councils of both municipalities, and they have authorized me to speak on their behalf today.

CHAIRMAN STEIN: Sir, are those plans for secondary treatment at those cities?

MR. TEMPLES: These are plans for secondary treatment, yes.

CHAIRMAN STEIN: Are they detailed plans and specifications?

MR. TEMPLES: No, no. It is the initial survey. The final plans and specs will be submitted after the initial information has been reviewed.

CHAIRMAN STEIN: Right. This is what sometimes we call preliminary plans and specs?

MR. HOWARD: Yes.

CHAIRMAN STEIN: Right. Thank you.

Any comments or questions?

MR. ROGERS: Yes. Date-wise, when do you expect those final plans? Early 1967?

MR. TEMPLES: I would say probably early 1967.

CHAIRMAN STEIN: Thank you, sir.

MR. HOWARD: Well, Mr. Chairman, that concludes our presentation, unless there is somebody I haven't recognized here from Georgia.

(No response.)

Thank you.

CHAIRMAN STEIN: Well, I think this concludes the presentations. There are several other points. But I would like to indicate that the case here has been called on the Chattahoochee River from Atlanta, Georgia to Fort Gaines, Georgia. This is the case called by the Secretary of the Interior. This is what we are limited to.

I am not unmindful of the other problems involved in the case, and this always raises a problem of where you cut something off and start. But this is the case we have here.

At least in my judgment, the segment of the river selected by the Secretary of the Interior for this case was probably an appropriate one, because I am sure we can come up with a program and recommendations which can be carried out within the foreseeable future -- and by that I don't mean too long -- to carry out a program that we could all see.

This does not mean that we are not aware of other resource developments on the river and in the country.

Speaking for myself, I think that we do recognize the position of the other Federal agencies in the water resources business, and we recognize their authorizations under law, the statutes and the committee reports that authorize their being.

I don't want to over-state this and say we need a lot of persuasion, but I can't conceive with the Federal conferees here that we could possibly, recognizing the state of the law, agree to a program which would do violence to the statutory obligations of the other Federal Water Resource agencies.

However, the areas beyond these stretches of the river are not included in this case. I think we will have to limit ourselves to the area of the river between Atlanta and Fort Gaines.

Now, with that, do any of the conferees have anything to add, or do you want to bring anything else up?

MR. HOWARD: I don't, Mr. Chairman.

MR. ROGERS: No.

CHAIRMAN STEIN: If not, I think we have done remarkably well in staying on schedule and developing a pretty clear picture about what has to be done.

I don't want to pre-judge the case, and I am not going to say anything about the substance, I hope, here. But I think, because of what has been done in the active program of Alabama and Georgia and the development of this report, aside from all the remarks about informing and getting in touch, and so forth and so on, we all pretty much know the situation in the Chattahoochee River.

I do think that both the State agencies here have analyzed the program thoroughly and have well-developed plans to take this into account.

I also want to commend the cities and the industries and the representatives who have appeared here, because again I think all you people have looked at the problem very realistically.

As I look at it, I do not at the present time, unless I have missed something in the presentation, think that all the parties concerned are very far apart on the Chattahoochee. I think the objectives are clear. I think the kind of treatment that we feel is required is pretty much agreed on. It seems to be agreed on by the State agencies, by the Federal agencies, by the industries and by the cities concerned.

I think that the time involved, while there may be some adjudication, clusters about a series of years which hasn't too much of a spread. I am very hopeful that we may, just on the record, be able to comply with Mr. Howard's request and wind up the conference here and come to complete agreement and turn this over to the States and have the program go forward.

Unless the conferees have some other view, we will recess now. The conferees will reconvene here in Executive Session at 9:30 tomorrow. I suspect that we will have a statement ready to make public at 12 o'clock in this room tomorrow. Hopefully, we can have some copies prepared if we can find the equipment so we can distribute this.

Let me again give you the schedule. We will recess now. The conferees -- just the conferees and their staff, any staff you may want to bring with you -- will go into Executive Session in this room at nine-thirty tomorrow morning. At 12 o'clock we will have a public session and have a statement for the people here.

Does anyone here, before recessing and going into Executive Session, feel he has anything to say or anything to add?

(No response.)

If not, I would like to at this point, for those who may not be coming back tomorrow, thank you all for your participation. I think you have helped us develop a very clear picture.

Again, I don't have this conceptualism of Federal versus States' rights or local rights or responsibilities on this thing. I think this pollution problem and the financial problem in dealing with it are so big that these concepts fall into the background, and there is enough for all of us to do.

It is kind of like the roads program -- unless we all pitch in, you are not going to have this. I think we need Federal, State, local and industry participation.

I do think, with the program you have that I see your goal out here on the Chattahoochee, we're on our way, and I do think we can develop an equitable program which should be satisfactory to all.

I would like to again thank you all for coming, and we would welcome you here at noon tomorrow to hear the announcement. And again, of course, the floor will be open.

If there is nothing else, we will stand recessed here until 12 o'clock tomorrow noon.

(Whereupon, at 4:48 p.m., the conference was recessed, to be reconvened at 12 o'clock noon, Friday, July 15, 1966.)

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CONCLUSIONS AND RECOMMENDATIONS

Friday, July 15, 1956

(The Conference was reconvened at 12:00 o'clock noon, Mr. Murray Stein, presiding.)

CHAIRMAN STEIN: May we reconvene?

I am happy to report that the States and the Federal Government have come to unanimous conclusions on the Chattahoochee, and there is no disagreement. I think this is a wonderful thing for our democratic process, because I think, as you could see and sense and hear as the proceedings went along, there were naturally fundamental differences in point of view and opinion.

Some of us -- at least the people on my right -- work for the Federal Government, and they have, naturally, one point of view, and the people on my left are from the State Government. The wonderful thing about this democratic process we have is when we go through and air all these points of view, we find that we have large areas of agreement, and we can go ahead with an active program.

I think the program that the States and we have come up with here will result in a clean Chattahoochee River now and in the future.

I would like to read you our conclusions and recommendations. When we get through, as long as the copies last, you can see Mrs. Pierre, and she will let you have copies at the end.

1. The Chattahoochee River is an interstate stream forming part of the border between Alabama and Georgia.

2. The Chattahoochee River between Atlanta, Georgia and Fort Gaines, Georgia is polluted due to discharges of wastes from municipalities, industries and the discharge of oxygen-deficient waters from impoundments including hydro-electric and navigation operations.

3. Water of high quality is required for many present and future uses of the Chattahoochee River, including public water supply; the propagation of fish, aquatic and wild life; recreation, including swimming, boating, fishing and other water-contact activities.

4. For the most part, action taken by municipalities and industries to date has not been sufficient to control pollution of the Chattahoochee River.

5. The installation of adequate remedial facilities has been delayed because of the complex nature of the municipal and industrial waste treatment problems.

6. All municipalities and others discharging domestic wastes shall provide treatment sufficient to protect the above-enumerated water uses. This will mean the minimum installation of secondary treatment with adequate disinfection of the effluent where indicated. Industries shall install comparable remedial facilities for

industrial waste discharges.

7. All necessary remedial facilities to control pollution of that portion of the Chattahoochee River covered by this Conference shall be completed and in operation on or before July 1, 1971. The State water pollution control agencies of Alabama and Georgia shall require all those responsible for water pollution within the area covered by the Conference to submit within 12 months from the issuance of the summary a time schedule including completion of plans and specifications, arranging of financing and awarding of contracts, to insure that the July 1, 1971 deadline is met.

I would like to emphasize that the arranging of financing, of course, is appropriate and critical for municipal waste treatment facilities. As far as industries are concerned, the arranging of financing is largely a private business. The key points for industry are the submission of detailed plans and specifications and the awarding of contracts for the interim time schedule.

8. The Alabama Water Improvement Commission and the Georgia Water Quality Control Board are to be commended for their effective and energetic programs, and it is recognized that these agencies will do everything possible to accelerate where possible the pollution abatement program described above.

9. Federal installations shall provide at least the same degree of treatment required of municipalities and industries and have such facilities in operation as soon as possible within the established time schedules.

10. Discharges from impoundments of that portion of the Chattahoochee River covered by this Conference shall be such as to maintain water quality for the above-enumerated water uses, including the provision of an adequate oxygen supply below such discharges.

That concludes the Conclusions and Recommendations of the conferees.

Do any of the conferees wish to say anything at this time?

(No response.)

If not, does anyone else wish to say anything?

(No response.)

If not, I wish to thank all of you for staying with us. I would like to thank the State, the industries, the municipalities and the other participants here for their cooperation. I do think that this presents a milestone in cleaning up the Chattahoochee River.

I do think also that the success of this Conference in large measure reflects the programs of Alabama and Georgia, because I think they recognize this problem. And I think, as you will recognize, the Federal program in this case in large measure reflects an adoption and an endorsement of the State programs of both these States.

I would like to thank all of you very much. If we have nothing further, the Conference stands adjourned.

(Whereupon, at 12:13 p.m., the Conference was adjourned.)

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